Vol. 903 Number 5

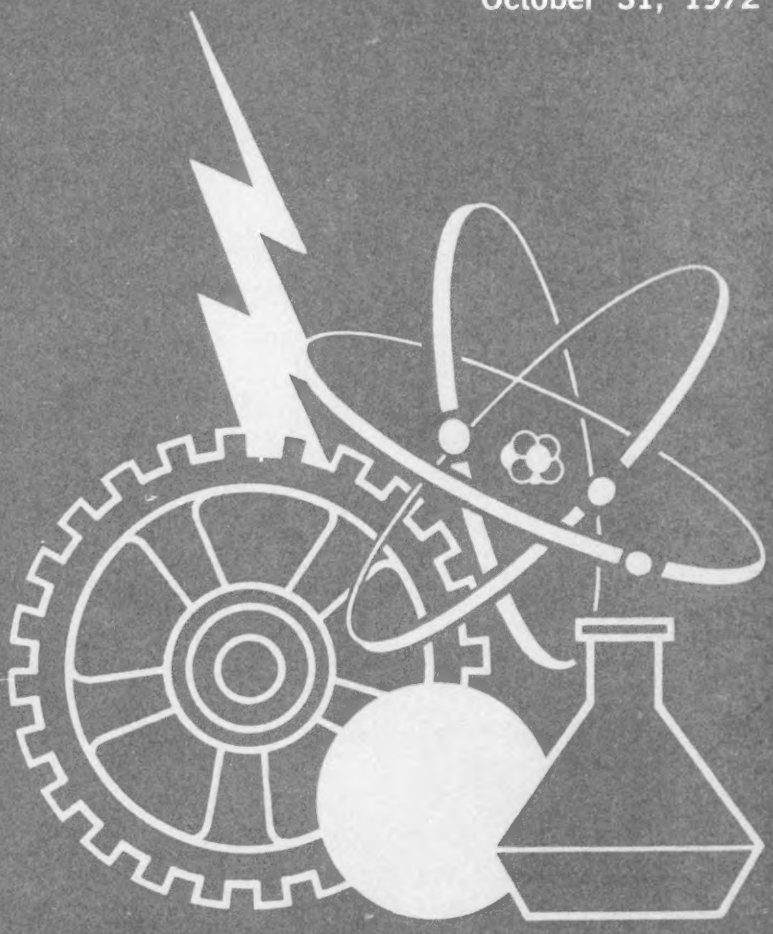
OFFICIAL GAZETTE

of the
UNITED STATES PATENT OFFICE

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

October 31, 1972



U. S. DEPARTMENT OF COMMERCE
Patent Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

October 31, 1972 Volume 903 Number 5

CONTENTS

	Page
Patents and Trademark Notices	
Reduction in Patents Granted	1512
Registration to Practice	1512
Trademark Registration Treaty	1512
Patent Suits	1512
Patent Notices	
Board of Appeals Decisions Rendered in the Month of September 1972	1514
Adverse Decisions in Interferences	1514
Certificates of Correction for the Week of October 31, 1972	1514
Condition of Patent Applications	1515
Reissue Patents Granted	1516
Patents Granted	
General and Mechanical	1518
Chemical	1632
Electrical	1669
Design Patents Granted	1716
Index of Patentees	PI 1
Indices of Reissues and Designs	PI 26
Classification of	
Patents (Including Reissues)	PI 29
Designs	PI 31
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 32
Designs	PI 33

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $89.00 per annum, foreign mailing $22.25 additional; single copies $2.00 each.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $17.00 per annum, foreign mailing $4.25 additional; single copies 40 cents each.

CIRCULARS OF GENERAL INFORMATION concerning PATENTS or TRADEMARKS, price 15 cents each.

PRINTED COPIES OF PATENTS are furnished by the Patent Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS and DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.O.

PATENT OFFICE NOTICES

Reduction in Patents Granted

The backlog of patent applications awaiting printing has been virtually eliminated. Effective with patents issuing on October 31, 1972, the weekly number of General and Mechanical, Electrical, and Chemical patents granted will be determined by the availability of applications in which the Base Issue Fee has been paid. Applicants who desire to obtain early patent grant dates are encouraged to remit payment of Base Issue Fees promptly.

WILLIAM I. MERKIN,
Assistant Commissioner for Administration.

Oct. 10, 1972.

Registration to Practice

The following list contains the names of former examiners who are applying for registration to practice before the Patent Office on the basis of 4 years or more service in the Examining Corps.

Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before November 29, 1972.

Campbell, John F., 9808 Cahart Place, Silver Spring, Md. 20903

Cooper, John C., III, 3365 N. Summit Ave., Milwaukee, Wis. 53211

Kaufman, Daniel C., 3205 West End Ave., Apt. 6, Nashville, Tenn. 37203

Linker, Raymond O., Jr., % Parrott, Bell, Seltzer, Park & Gibson, 1211 E. Morehead St., Charlotte, N.C. 28201

McLaughlin, John J., 8015 1st St., Lanham, Md. 20801

Woodbridge, Richard C., 517 S. 25th St., Arlington, Va. 22202

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Oct. 11, 1972.

Trademark Registration Treaty

Vienna Diplomatic Conference

This is further to the notice published in Volume 902 of the OFFICIAL GAZETTE of September 19, 1972 (Trademark Section, p. 105 and Patent Section, p. 751) including the Conference draft of the Trademark Registration Treaty (TRT), the current draft of the Regulations and related documents.

As a result of the decision taken on September 29, 1972, by the Executive Committee of the Paris Union, a Diplomatic Conference for the negotiation of the proposed Trademark Registration Treaty will convene in Vienna, Austria, from May 17 to June 12, 1973.

In order to assist in the development of a position for a final preparatory meeting of a Committee of Experts scheduled in Geneva from December 5 to 12, 1972, to review the draft Regulations for the Treaty, interested parties were requested in the notice published on September 19 to submit their views or suggestions, particularly in regard to the draft regulations, to the Commissioner of Patents, Washington, D.C., 20231 by November 20, 1972. We have been advised that the Conference draft of the Regulations to be produced from the December meeting is planned to be released by the World Intellectual Property Organization in January 1973. When released it will be published in the OFFICIAL GAZETTE.

Final comments on the Conference drafts of the Treaty and the Regulations should be submitted to the Commissioner of Patents by April 6, 1973, in order to be considered in preparation of the U.S. position at the Diplomatic Conference of Vienna.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Oct. 24, 1972.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,686,039, J. C. Bender, METHOD OF AND APPARATUS FOR DETERMINING PHYSICAL PROPERTIES OF MATERIALS; 2,790,140, same, METHOD OF AND MEANS FOR TESTING FERROUS MATERIAL; 2,814,019, same, MAGNETIC METHOD OF DETECTING STRESS AND STRAIN IN FERROUS MATERIAL; 2,892,151, same, APPARATUS FOR LOCATING ANOMALIES IN A WELL BORE; 2,960,755, Bender and McWhorter, METHOD OF MAKING A MAGNETIC CORE; 2,961,602, J. C. Bender, METHOD OF AND APPARATUS FOR DETERMINING PHYSICAL PROPERTIES OF MATERIALS; 2,961,624, Bender and McWhorter, MAGNETIC CORE; 3,095,736, A. S. Rogers, STUCK PIPE LOCATOR; 3,233,170, same, MAGNETIC STUCK PIPE LOCATOR AND DETONATOR USING A SINGLE LINE TO TRANSMIT SIGNALS, filed Mar. 17, 1972, D.C., N.D. Tex. (Fort Worth), Doc. CA-4-1936, *Homco International, Inc. v. Gearhart-Owen Industries, Inc., GO International Inc. and Rowco Instruments, Inc.* Consent judgment, defendants have infringed. No provision is made and this judgment does not and is not intended to release any joint tort feasor or other third parties from past infringement of said Letters Patent, May 15, 1972.

2,790,140. (See 2,686,039.)

2,810,549, W. A. Morrison, FLUID ACTUATED PERCUSSIVE TOOL; 2,886,004, same; 2,937,619, E. H. Kurt, HOLE CLEANING DEVICE; 2,942,579, W. A. Morrison, ROCK DRILL; 2,951,467, same; 3,431,984, Buehler and Peterson, CHECK VALVE VENT AND BLOW AIR METERING PLUG FOR ROCK DRILLS, filed Apr. 20, 1972, D.C. Conn. (Bridgeport), Doc. B-489, *Ingersoll-Rand Company v. Numa Tool Co., Inc.*

2,814,019. (See 2,686,039.)

2,886,004. (See 2,810,549.)

2,892,151. (See 2,686,039.)

2,931,953. (See 3,611,763.)

2,937,619. (See 2,810,549.)

2,942,579. (See 2,810,549.)

2,951,467. (See 2,810,549.)

2,960,755. (See 2,686,039.)

2,961,602. (See 3,686,039.)

2,961,624. (See 2,686,039.)

3,051,939. (See 3,316,547.)

3,095,736. (See 2,686,039.)

3,125,641, D. R. Von Recklinghausen, APPARATUS FOR INDICATING STEREOPHONIC BROADCASTING TRANSMISSION AND THE LIKE; 3,296,378, Fish and Russell, MONOPHONIC-STEREOPHONIC AUTOMATIC SWITCHING AND DEMODULATOR CIRCUIT; 3,348,154, Fish and Von Recklinghausen, SIGNAL MIXING AND CONVERSION APPARATUS EMPLOYING FIELD EFFECT TRANSISTOR WITH SQUARE LAW OPERATION, filed Nov. 26, 1968, D.C., S.D.N.Y., Doc. 68-C-4688, *H. H. Scott, Inc. v. Fisher Radio Corporation.* Stipulation and order, Emerson Electric Co. is substituted as defendant in place of Fisher Radio Corp. and on this stipulation the complaint and counterclaims are discontinued without prejudice, Apr. 18, 1972.

3,233,170. (See 2,686,039.)

3,296,378. (See 3,125,641.)

3,316,547, S. K. Ammann, INTEGRATING ANALOG-TO-DIGITAL CONVERTER; 3,051,939, R. W. Glibert, ANALOG-TO-DIGITAL CONVERTER; D. 217,289, J. R. Andreaggi, DIGITAL PANEL METER, filed Feb. 15, 1972 D.C., N.D. Calif. (San Francisco), Doc. C-72-269, *Weston Instruments Inc. v. Data Technology Corp. et al.*

3,348,154. (See 3,125,641.)

3,386,564, L. Pease, **FEED TABLE**; **3,620,432,** V. V. Emery, **MACHINE FOR DRAWING EXTRUDED PLASTIC TUBING OR ROD FROM AN EXTRUDER,** filed Mar. 17, 1972, D.C., N.D. Ala. (Montgomery), Doc. 1213–S, *Vern Emery Company, Inc.* v. *Abel L. Trujillo et al.* Upon consideration of plaintiff's motion to dismiss this cause without prejudice, ordered, cause dismissed without prejudice to the parties, May 10, 1972.

3,393,838. (See D. 215,259.)

3,421,171, T. Tsuruzawa, **BRUSH FOR CLEANING,** filed May 24, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–1160–IH, *K-Tel International, Inc.* v. *Sav-On-Drugs, Inc., and S. C. Chan, doing business as Sing Lee Plastic & Metal Mfg.* Same, filed May 31, 1972, D.C.N.J. (Camden), Doc. 930–72, *K-Tel International, Inc.* v. *Albert E. Price, Inc.*

3,429,022, E. A. Oster, **SCRAP RECOVERY PROCESS,** filed May 9, 1972, D.C., E.D. Mich. (Detroit), Doc. 38273, *Earl A. Oster* v. *Grant-Southern Iron & Metal Company.* Same, filed May 9, 1972, D.C., E.D. Mich. (Detroit), Doc. 38274, *Earl A. Oster* v. *Sam Allen & Sons, Inc.*

3,431,984. (See 2,810,549.)

3,432,793, Muska, Schacker and McHattie, **GROUNDING CONNECTION FOR ELECTRICAL UNIT,** filed June 9, 1972, D.C. Conn. (New Haven), Doc. 15099, *Leviton Manufacturing Co., Inc.* v. *Arrow-Hart, Inc.* Same, filed June 9, 1972, D.C. Conn. (New Haven), Doc. 15100, *Slater Electric Inc.* v. *Arrow-Hart, Inc.*

3,440,792, H. H. Schmidgall, **COMBINATION STIRRUP AND SPACER FOR RE-ENFORCED CONCRETE PIPE AND LIKE STRUCTURE,** filed Feb. 9, 1972, D.C. Minn. (Minneapolis), Doc. 4–72–C–96, *William E. Schulte, doing business as DeWalt Company* v. *Hartzell H. Schmidgall, Hawkeye Concrete Products Co., and Peerless Chain Company.*

3,450,436, W. N. Phillips, **HIGH-LIFT SIDE DUMP MECHANISM,** filed Sept. 24, 1971, D.C., N.D. Fla. (Tampa), Doc. 71–436–C, *Leco, Inc.* v. *Stoney's Hi-Lift Service, Inc.* Stipulation of dismissal under F.R.C.P. 41(a)(1), May 23, 1972.

3,464,025, W. E. Bell, **GAS LASERS,** filed June 5, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–1254–LTL, *Spectra-Physics, Inc.* v. *Britt Electronic Products Corporation.* Same, filed June 7, 1972, D.C., M.D. Fla. (Orlando), Doc. 72–155–Orl–C, *Spectra-Physics, Inc.* v. *Control Laser-Orlando, Inc.*

3,471,862. (See 3,611,763.)

3,484,735, J. G. Fanelli, **ELECTRIC TERMINAL ADAPTER,** filed Feb. 10, 1970, D.C., N.D. Ind. (South Bend), Doc. 70S17, *Coleman Cable & Wire Company* v. *Trinetics, Inc.* Stipulation of non-infringement in favor of defendant, May 22, 1972.

3,488,868, Gutowski, Kuchta and Ferguson, **MEASURING TOOL**; **D. 213,643,** same, **MEASURING TOOL FOR CARPENTRY AND THE LIKE,** filed Apr. 5, 1972, D.C., E.D.N.Y. (Brooklyn), Doc. 72–C–438, *The Stanley Works* v. *Oswall Tool Co., Ltd.*

3,543,760, L. R. Bolduc, **DISPOSABLE GROUND PLATE ELECTRODE**; **3,624,590,** same, **CLAMP FOR DISPOSABLE GROUND PLATE ELECTRODE,** filed Feb. 1, 1972, D.C. Colo. (Denver), Doc. C–3699, *Medical Plastics, Inc.* v. *Valleylab, Inc.*

3,572,596, M. J. Dykmans, **CABLE STRESSING AND WINDING APPARATUS,** filed Apr. 19, 1972, D.C., S.D. Calif. (San Diego), Doc. 72–128–T, *Maximiliaan J. Dykmans and BBR Prestressed Tanks, Inc.* v. *Gulf Oil Corporation.*

3,584,402, J. J. Silverman, **SANDAL FOR FOOT CAST,** filed May 2, 1972, D.C., E.D. Mich. (Detroit), Doc. 38223, *Ortho Industries, Inc.* v. *S. H. Camp & Company.*

3,599,921, W. J. Cumber, **INDEPENDENT SUPPORT CLIPS,** filed May 25, 1972, D.C., N.D. Ohio (Cleveland), Doc. C72–549, *Erico Products, Inc.* v. *Fastway Fasteners, Inc.*

3,611,763, B. S. Sedley, **MAGNETICALLY OPERATED MECHANISM AND MAGNETIC CARD**; **2,931,933,** W. Barney, **MAGNETICALLY CONTROLLED LOCK AND SWITCH**; **3,471,862,** same, **ENCODER APPARATUS FOR MAGNETIC CREDIT CARDS AND THE LIKE,** filed May 1, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–961–JWC, *H. O. Boehme, Inc.* v. *Rusco Industries, Inc. et al.*

3,620,432. (See 3,386,564.)

3,624,590. (See 3,543,760.)

D. 213,643. (See 3,488,868.)

D. 215,259, M. J. Syverson, **BEVERAGE DISPENSER**; **3,393,838,** same, **STORAGE CONTAINER AND DISPENSER,** filed Feb. 28, 1972, D.C., S.D. Tex. (Houston), Doc. 72–H–258, *Fountain Industries, Inc.* v. *Consolidated Chemical Corp.*

D. 217,289. (See 3,316,547.)

Board of Appeals Decisions Rendered in the Month of September 1972

Examiner affirmed	176
Examiner affirmed in part	12
Examiner reversed	33
Total	221

Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents, final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,256,244, R. C. Byloff and J. Chun, ALTERNATING CURRENT POWER GENERATING SYSTEM, decided Dec. 14, 1971, Interference No. 95,865, claims 5, 6, 7, 8, 11, 15, 16, and 17.

Patent No. 3,279,573, W. R. E. Hensel, FRICTION CLUTCH CONSTRUCTION, decided May 31, 1972, Interference No. 96,162, claims 4, 5, 6, 7, 10, and 11.

Patent No. 3,297,708, M. Garber and B. Miller, METHOD OF PREPARING THIAZOLIDINES, decided Mar. 21, 1972, Interference No. 97,461, claim 5.

Patent No. 3,347,663, C. G. Bieber, PRECIPITATION HARDENABLE STAINLESS STEEL, decided Aug. 29, 1972, Interference No. 97,406, claims 4, 27, and 31.

Patent No. 3,431,247, N. J. H. Gulpen and H. G. Gerritsen, CHEMICAL PROCESS AND PRODUCTS, decided Apr. 26, 1972, Interference No. 97,080, claims 1 and 3.

Patent No. 3,465,068, V. G. Camacho, J. J. Anderson, and W. M. Byrd, Jr., PHOSPHORUS-CONTAINING ESTERS AND PROCESS THEREFOR, decided Aug. 4, 1972, Interference No. 97,940, claims 1, 2, 3, 9, 11, 17, 18, and 25.

Patent No. 3,522,950, R. C. Schenck, Jr., PISTON AND PTFE RING ASSEMBLY FOR INTERNAL COMBUSTION ENGINES, decided Aug. 31, 1972, Interference No. 97,741, claims 1, 2, 3, 4, 5, and 6.

Patent No. 3,529,692, W. A. Meier, SOUND BARRIER, decided Aug. 31, 1972, Interference No. 97,700, claims 1, 2, 3, 4, 5, 7, and 8.

Patent No. 3,571,737, S. E. Miller, TRANSMISSION LINE, decided Aug. 18, 1972, Interference No. 97,801, claims 1, 2, 3, 4, 6, and 9.

Certificates of Correction for the Week of Oct. 31, 1972

D. 224,234	3,623,825	3,643,289	3,663,324
3,527,846	3,623,900	3,645,747	3,663,708
3,538,599	3,624,958	3,647,119	3,664,169
3,563,764	3,625,404	3,647,658	3,664,316
3,568,706	3,626,138	3,647,967	3,664,837
3,578,723	3,626,504	3,648,052	3,665,338
3,581,240	3,627,292	3,648,740	3,665,489
3,589,855	3,628,099	3,649,135	3,665,608
3,591,349	3,628,965	3,649,319	3,666,050
3,592,170	3,629,594	3,649,761	3,666,079
3,594,112	3,629,623	3,649,914	3,666,407
3,594,141	3,629,968	3,650,222	3,666,581
3,597,082	3,629,977	3,650,262	3,666,854
3,598,739	3,630,264	3,650,320	3,667,162
3,601,450	3,630,442	3,650,512	3,667,435
3,601,458	3,630,743	3,651,384	3,667,743
3,601,657	3,631,405	3,652,440	3,667,808
3,603,408	3,631,872	3,652,670	3,668,616
3,603,744	3,632,029	3,652,960	3,669,632
3,608,798	3,632,544	3,653,064	3,670,023
3,610,478	3,632,582	3,653,270	3,670,065
3,610,791	3,632,843	3,655,647	3,670,095
3,610,862	3,633,915	3,655,956	3,670,381
3,612,428	3,634,073	3,655,995	3,670,560
3,614,086	3,634,117	3,656,446	3,670,794
3,615,080	3,634,142	3,657,003	3,670,800
3,615,083	3,634,782	3,657,338	3,670,902
3,615,584	3,635,707	3,657,842	3,671,101
3,616,668	3,635,901	3,658,591	3,671,380
3,617,270	3,636,234	3,658,619	3,671,472
3,617,797	3,637,106	3,658,837	3,671,800
3,618,052	3,637,368	3,658,988	3,673,878
3,619,134	3,638,756	3,659,488	3,674,008
3,620,311	3,639,142	3,660,137	3,674,645
3,620,605	3,639,674	3,660,291	3,675,419
3,621,694	3,640,132	3,660,534	3,675,721
3,621,908	3,640,216	3,660,823	3,675,858
3,622,437	3,641,144	3,661,399	3,676,195
3,622,491	3,641,331	3,662,194	3,676,440
3,622,870	3,641,508	3,662,230	3,677,939
3,623,719	3,643,148	3,662,968	3,678,409

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF OCTOBER 17, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	8-19-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-02-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-09-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-09-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant). Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-04-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	2-23-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	8-11-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-01-71
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—Director (Vacant). Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-16-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-26-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts: Household, Personal and Fine Arts.	3-18-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-01-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	8-02-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	9-23-71
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	11-01-71
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-19-71

Expiration of patents: The patents within the range of numbers indicated below expire during November 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,721,999 to 2,725,557, inclusive
Plant Patents..... Numbers 1,427 to 1,435, inclusive

REISSUES

OCTOBER 31, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

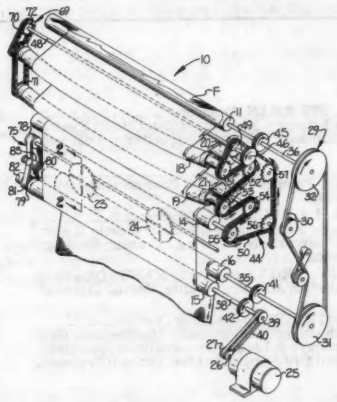
27,516
CLOTH STRAIGHTENING APPARATUS

Frank W. Leitner and William T. Griffin, Charlotte, N.C., assignors to Coltron Industries, Inc., Matthews, N.C.

Original No. 3,402,443, dated Sept. 24, 1968, Ser. No. 548,552, May 9, 1966. Application for reissue Sept. 23, 1970, Ser. No. 74,645

Int. Cl. D06h *3/12*

U.S. Cl. 26—51.5 **10 Claims**



Apparatus for correcting fabric distortions, such as bow, skew, or combinations thereof, including correction means defining a correction zone, feeding means for positively feeding distorted fabric to the correction means for correction of the distortions therein and serving to delineate the input side of the correction zone, and advancing means for positively advancing the corrected fabric from the correction means and for delineating the output side of the correction zone, the feeding means and advancing means operating at substantially equal lineal surface speeds so that elongation or stretching of the fabric during correction is avoided.

27,517
METHOD OF CUMULATIVELY RECORDING INTELLIGENCE ON A RECORD CARD

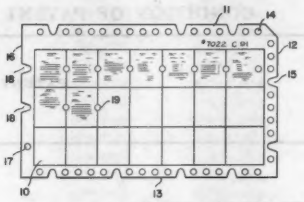
Morris Schwartz, Plainville, Conn., and Edward K. Kaprelian, Mendham, N.J., assignors to The Kalart Company, Inc., Plainville, Conn.

Original No. 3,418,119, dated Dec. 24, 1968, Ser. No. 471,172, July 12, 1965, which is a continuation of Ser. No. 283,670, May 24, 1963, which in turn is a continuation of Ser. No. 437,540, June 17, 1954. Application for reissue Dec. 15, 1969, Ser. No. 884,864

Int. Cl. G03c *5/04*

U.S. Cl. 96—27 **9 Claims**

There is disclosed a method of cumulatively recording independent intelligence entries spaced in time in the form of photographic images by producing on a carrier such as a card providing space for a plurality of photographic images each representing one entry, a photographic image occupying a selected one of several predetermined fractional areas on the card while shielding the remaining fractional areas, and producing after an arbitrary period of time a second photographic image representing a second entry on another selected fractional area of the card



and so forth, thereby accumulating on the same card a sequence of entries representing a continuing transaction in numerical and chronological order.

27,518
EASY-OPENING CAN END WITH NONREMOVAL TAB

Omar L. Brown, Dayton, Ohio, assignor to Ermal C. Fraze, Dayton, Ohio

Original No. 3,446,389, dated May 27, 1969, Ser. No. 675,215, Oct. 13, 1967. Application for reissue Feb. 24, 1971, Ser. No. 118,580

Int. Cl. B65d *17/20*

U.S. Cl. 220—48 **28 Claims**

There is described herein an easy-opening container wall having a wall region formed by a rupturable score line and a bendable score line. A tab is secured to the container wall outside of the wall region and has a rupturing portion that overlies a portion of the wall region. Upon lifting the tab, the rupturing portion engages the wall region and forces the latter inwardly to thereby rupture the rupturable score line and cause the wall region to be bent inwardly into the interior of the container about the bend line.

27,519
PACKAGE FOR STERILIZED ARTICLE

Kenneth M. Shepherd, Prospect Heights, and Ronald L. Whipperman, North Chicago, Ill., assignors to Container Corporation of America, Chicago, Ill.

Original No. 3,527,400, dated Sept. 8, 1970, Ser. No. 775,345, Nov. 13, 1968. Application for reissue Mar. 10, 1971, Ser. No. 122,840

Int. Cl. B65d *33/16*

U.S. Cl. 229—87 R **2 Claims**

A package, formed from a blank of foldable paperboard, has top and bottom panels adapted to be folded into a face-to-face relationship to enclose an article to be

positioned therebetween. The bottom panel has a coating compound applied to the inner surface thereof while the inner surface of the top panel has flexible material secured thereto. The flexible material is sealed to the coated surface along predetermined lines of seal when the panels are folded to enclose the article. A portion of the coating

compound on the inner surface of the bottom panel is releasable from that surface in the areas of the lines of seal upon opening of the package so that it adheres to the flexible material at the lines of seal and is pulled away from the bottom panel without tearing the paperboard and thereby preventing contamination of the article by loose particles of torn paperboard.

27,520

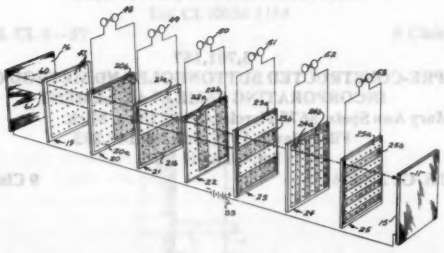
ELECTRON BEAM SCANNING DEVICE UTILIZING DIGITAL CONTROL SIGNALS, AND CAPABLE OF RANDOM ADDRESSING

Donald E. Hultberg, Venice, and Lester A. Jeffries, Palos Verdes, Calif., assignors to Northrop Corporation, Beverly Hills, Calif.

Original No. 3,408,532, dated Oct. 29, 1968, Ser. No. 511,747, Dec. 6, 1965. Application for reissue Oct. 28, 1969, Ser. No. 871,979

Int. Cl. H01j *29/41*

U.S. Cl. 315—12 **22 Claims**



This invention relates to an electron beam scanning device, and more particularly to such a device which is operative in response to a digital control signal and is capable of random addressing.

27,521

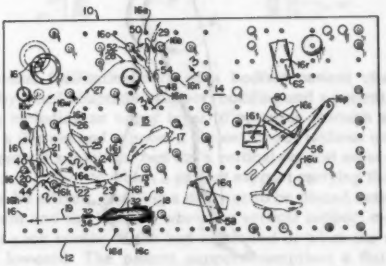
MAZE DEVICE

Ronald W. Redo, 773 Blossom Way, Hayward, Calif. 94541

Original No. 3,539,190, dated Nov. 10, 1970, Ser. No. 718,984, Apr. 1, 1968. Application for reissue Dec. 16, 1970, Ser. No. 98,970

Int. Cl. A63f *9/08*

U.S. Cl. 273—153 R **6 Claims**



A maze device including a board or the like to provide a working surface from which a plurality of pins at various spaced intervals from each other project, thus defining a multiplicity of connected and intersecting paths between the pins. A token is provided so shaped and dimensioned that it can be slidably maneuvered between certain of the pins and not others, and thus the token is movable along a mazelike path on the surface of the board from one station thereon to another remote from the first. The mazelike path or paths which permit passage of a token, and those which do not, are such as not to be visually discernible to the average observer in respect to which will permit such passage until actual movement with the token is undertaken. In addition, certain of the pins are provided with impediments of various shapes positioned at different elevations above the working surface of the board, and these impediments cofunction with portions of the token to permit or bar passage on the path between the pin with the impediment and the one adjacent to it.

PATENTS

GRANTED OCTOBER 31, 1972

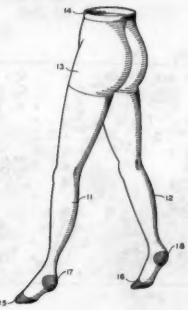
GENERAL AND MECHANICAL

3,701,164

PANTY-HOSE

James H. Blore, Greenville, S.C., assignor to Phillips Fibers Corporation

Filed Jan. 14, 1970, Ser. No. 2,870
Int. Cl. A41b 9/04
U.S. Cl. 2—224 R **9 Claims**



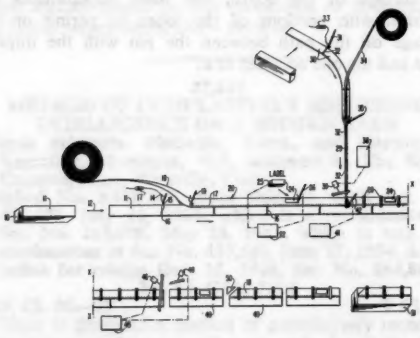
A panty-hose garment with the panty portion formed of textured polypropylene yarns and the stocking portion formed of nylon yarns. The heels and toes of the stocking portions can be formed with textured polypropylene yarns. The polypropylene yarns can be solution dyed a different color from the remainder of the garment.

3,701,165

GARMENTS WITH DETECTABLE MARKS

Erie George Huddleston, Monroe, Ga., assignor to Oxford Industries, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 851,921, Aug. 21, 1969, Pat. No. 3,661,016. This application April 29, 1971, Ser. No. 138,598
Int. Cl. A41d
U.S. Cl. 2—243 R **8 Claims**



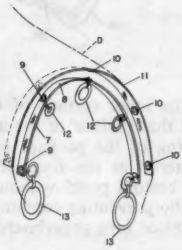
Garments are formed with marks or stitching which carry a substance detectable by magnetic detecting devices. When the magnetized substance on the garment part is detected in a process of making garments, subsequent garment making steps are actuated in response to the detection of the stitching.

3,701,166

ORNAMENT FOR SLEEVELESS DRESSES

Signe R. Lindblom, 10 Beech St., Garden City, N.Y.

Filed March 4, 1971, Ser. No. 121,026
Int. Cl. A41d 27/08
U.S. Cl. 2—244 **6 Claims**



This invention consists of a strip of covered feather-boning having a plurality of snap fasteners or the like adapted to secure the aforesaid strip to the underside of a strip of tape that is secured to that part of a sleeveless dress from which the arm of a lady extends. A plurality of plastic rings are secured by any desired means in longitudinal spaced relation to one another to the underside of the aforesaid featherboning.

3,701,167

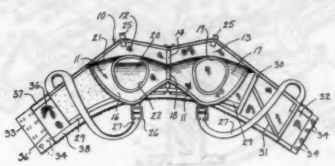
PRE-CONSTRUCTED BUTTONHOLE AND METHOD OF INCORPORATING SAME IN A GARMENT

Mary Ann Spetz, 5675 Fiercier Court, Utica, Mich.

Filed May 7, 1971, Ser. No. 141,293
Int. Cl. A41f 1/02
U.S. Cl. 2—266 **9 Claims**

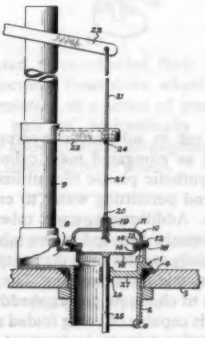
A pre-constructed buttonhole consisting of components independent of an article to which they are to be attached, and a method for incorporating the components into a material to form a finished buttonhole. The components consist of a reinforcing piece disposed on the surface opposite the exterior finished surface of the article, and buttonhole pieces having tab-portions disposed on the finished surface of the article. A slit is made which extends through the reinforcing piece and layers of material composing the article. The tab portions of the buttonhole pieces are inserted through this slit to the exterior finished surface of the article and affixed thereto to form a buttonhole. The buttonhole components are manufactured from continuous strips of material. The individual components may be separated prior to being placed in the hands of the user.

3,701,168
BRASSIERES FOR MASTECTOMY PATIENTS
Zella J. Balow, 3810 Nimitz St., Eau Claire, Wis.
Filed Aug. 23, 1971, Ser. No. 173,853
Int. Cl. A61f 1/00; A41c 3/10
U.S. Cl. 3—36 10 Claims



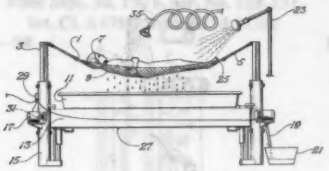
A brassiere for mastectomy patients who have had one breast surgically removed, which improved brassiere includes an artificial breast insert or so-called prosthesis of a size identical to the patient's normal breast and filled with weighted filling adapted to conform in shape, contour, and weight to the patient's normal breast, said novel insertable prosthesis having an opening therein through which filling can be easily added or removed, as desired, and said brassiere being designed with a special integral retaining pocket-like lining therein for removably securing said prosthesis insert in position, the removability of said insert permitting it to be temporarily removed from the bra when desired.

3,701,169
TOILET FLUSH VALVE ASSEMBLY
Dan Kamphausen, Littleton, Colo., assignor to Twentieth Century Products Corporation, Englewood, Colo.
Filed Nov. 25, 1969, Ser. No. 879,884
Int. Cl. E03d 1/34
U.S. Cl. 4—57 8 Claims



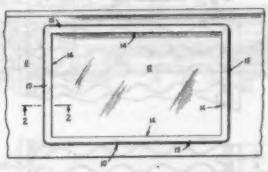
A toilet flush vale including a buoyant valve member movable toward and away from a valve seat and normally held thereagainst by the hydrostatic pressure of water in the tank. The valve member has an annular flange for seating on the valve seat, and a flexible sealing gasket is carried by the valve member a small distance below the annular flange so as to define an annular gap therebetween. A guide rod depends from the valve member in guided engagement with a guide structure below the seat. The valve member is moved away from the seat by means of a flexible line, and an external arm member connected to an overflow pipe of the flush valve assembly serves to guide the flexible line and to limit upward travel of the valve member and thereby prevent disengagement of the guide members.

3,701,170
APPARATUS FACILITATING CARE OF A BEDFAST PATIENT
James M. Bond, 3435 Ave. H, Fort Worth, Tex.
Filed July 8, 1971, Ser. No. 160,875
Int. Cl. A47k 3/06, 3/062
U.S. Cl. 4—174 16 Claims



Apparatus facilitating care of a bedfast patient characterized by a bed adapted to support bedding and a patient, the bedding including an upper layer to protrude through apertures in a flat net and support a patient's body without irritating the patient's skin. The bed has a vertical support means adjacent each corner to which a patient support carrying the patient can be affixed, enabling a distance to be placed between the patient and the bedding when the vertical support means adjacent each corner of the bed are raised or when the mattress is lowered. The patient support comprises a flat net which can remain in place beneath the patient and on top of the bedding, yet when affixed to the vertical support means adjacent the corners of the bed by appropriate means such as chains and snap hooks, will support the patient. A portable shower nozzle is provided, and a portable container for water which has been run over the patient is provided for emplacement beneath the patient while the patient is being washed. Heat means such as heat lamps, and a heated air blower and hose are provided for preventing chilling and for drying the patient. The specific structure and accessories are disclosed.

3,701,171
WORK SURFACE CLAMPING MEANS FOR DROP-IN COOKING EQUIPMENT
Donald E. Fritzsche, Chicago Heights, Ill., assignor to General Electric Company
Division of Ser. No. 836,036, June 24, 1969, Pat. No. 3,561,020. This application Sept. 22, 1970, Ser. No. 74,888
Int. Cl. F03c 1/18; F24c 15/10
U.S. Cl. 4—187 A 2 Claims

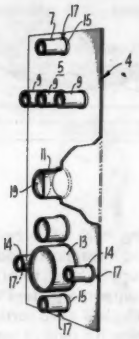


A clamping arrangement for fastening a drop-in device in an opening in a work surface. A trim, formed integrally with the drop-in device, overlies and extends generally parallel to the work surface. A threaded stud is permanently attached to and extends downwardly from the trim. A clamp member has first and second right angularly disposed legs with a hole in the second leg. The threaded stud extends through the hole and a nut is threaded on the stud, the nut being movable between clamping and unclamping positions. In moving to its clamping position, the nut causes the upwardly extending first leg to engage the trim and the second leg to engage the work surface.

3,701,172
PLUMBING INSTALLATION JIG

William F. McClenahan, 778 Burlway Road, Burlingame, Calif.

Filed March 31, 1971, Ser. No. 129,663
Int. Cl. E03d 11/00
U.S. Cl. 4—252 3 Claims

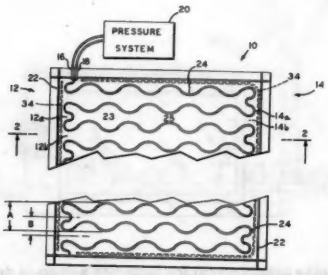


A plumbing installation jig is provided for the rapid installation of plumbing fixtures which is adaptable for either poured concrete or Gunite walls. The device includes a metal plate having a plurality of sleeves thereon having the correct size and configuration for the fixture to be mounted.

3,701,173
INFLATABLE BODY SUPPORT

John K. Whitney, Lenneys Lane, Orchard Park, N.Y.

Filed May 22, 1970, Ser. No. 39,661
Int. Cl. A47c 27/08
U.S. Cl. 5—349 6 Claims



An inflatable body support having sequentially expandable first and second banks of cells which comprise transversely extending fingers. Each of the finger cells have substantially the same effective diameter with a center to center distance, between a cell from the first bank and a cell from the second bank, which is less than said effective diameter.

3,701,174
QUILT AND CUSHION CONSTRUCTION AND BUTTON THEREFOR

Arthur J. Randolph, Santa Rosa, Calif., assignor to Tuftamatic, Inc., San Diego, Calif.

Filed Feb. 8, 1971, Ser. No. 113,514
Int. Cl. A44b 1/18
U.S. Cl. 5—356 9 Claims

A button formed of male and female parts insertable through a quilt or cushion, the male part penetrating the female part and being locked in place when so inserted. Quilt or cushion constructed with such buttons.

3,701,175
HYDROPHONE DAMPER ASSEMBLY

James W. Widenhofer, Jackson, Mich., assignor to Sparton Corporation, Jackson, Mich.

Filed June 9, 1971, Ser. No. 151,269
Int. Cl. B63b 21/52, 51/02
U.S. Cl. 9—8 R 12 Claims

A damper for use in submerged hydrophone suspension systems including an elongated mass cylinder defined by a tube of flexible synthetic plastic film utilizing a check valve located at each end permitting water to enter the tube and preventing egress. Additionally, each tube end is provided with a disk transversely disposed to the tube length and of a diameter substantially greater than that of the tube to provide drag and hydrodynamic mass damping. The tube and disk are of a configuration to eliminate vortex shedding and the entire damper assembly is capable of being folded and packed within a concise configuration prior to deployment.

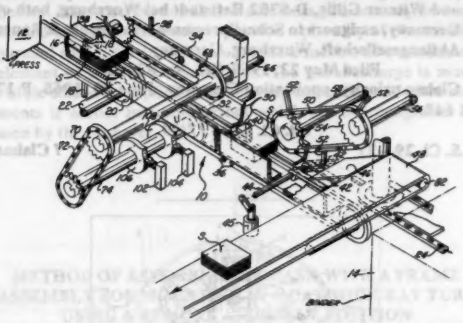
3,701,176
PRESS TO BINDER TRANSFER SYSTEM

James F. Procter, Milliken, Ontario, Canada; Henry R. Mebus; Robert J. De Young, and Joseph Coviello, all of Easton, Pa., assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed July 29, 1971, Ser. No. 167,275
Int. Cl. B42c 19/00
U.S. Cl. 11—1 R 7 Claims

A transfer system for transferring collated signatures from a continuously operating collating press to a synchronously operating binder wherein a transfer conveyor means transfers the collated signatures from the press to the binder and a divert system is provided for diverting signatures from the transfer conveyor means when the binder is shut down thereby

enabling the press to continue to operate. A synchronizing system is provided for re-starting the binder and establishing



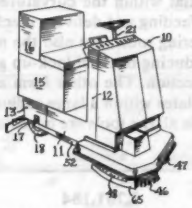
synchronism with the press and the transfer conveyor without stopping either the press or the transfer conveyor.

3,701,177

FRONT WHEEL DRIVEN FLOOR SCRUBBER

Leonard Meyer, Highland Park; Walter G. Ashton, Winnetka, and James E. Siegele, Mundelein, all of Ill., assignors to Star Industries, Inc., Chicago, Ill.

Filed April 22, 1971, Ser. No. 136,376
Int. Cl. A47l *11/16*
U.S. Cl. 15—50 R **6 Claims**



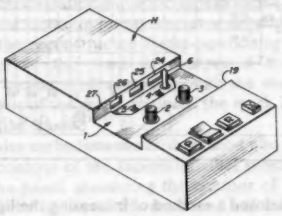
A battery-powered three-wheeled floor scrubber vehicle having a single steerable front drive wheel and a frameless body structure consisting of a series of interconnected tank members and a pair of hydraulically controlled floor scrubbing brushes and squeegee arrangement mounted forwardly of the front steerable drive wheel.

3,701,178

CASSETTE TAPE CLEANER

Jonathan C. Kuntz, 63 Elm St., North Reading, Mass.

Filed Dec. 2, 1970, Ser. No. 94,453
Int. Cl. A47l *5/38*
U.S. Cl. 15—308 **7 Claims**



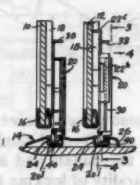
Apparatus for cleaning magnetic tape in a cassette has a plurality of scraping blades which project into the standard openings in the cassette when the cassette is inserted in the apparatus and a drive mechanism which engages the take-up reel in the cassette to pull the tape past the blades while a flow of air past the blades and away from the cassette removes the scrapings from the blades.

3,701,179

GUIDES FOR SLIDING DOORS

Arthur T. Cox, 18311 E. Railroad St., Industry, Calif.

Filed Sept. 30, 1971, Ser. No. 185,221
Int. Cl. A47h *15/00*; E05d *13/02*
U.S. Cl. 16—90 **8 Claims**



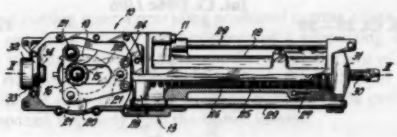
This invention pertains to hardware for installing framed door panels in a doorway to provide a sliding door installation. Door panels are framed with rails and stiles that are interconnected at the door corners by identical brackets. The brackets at the top corners of the doors are used to carry roller wheels that rest on upper trackways of the doorway and the brackets at the bottom corners of the doors are used to carry guides that guide the doors over the trackways of a threshold of the doorway.

3,701,180

DOOR CLOSER

Dietrich Jentsch, and Herbert Cleff, both of Ennepetal-Voerde, Germany, assignors to Dorken & Mankel KG, Ennepetal-Voerde, Germany

Filed July 2, 1970, Ser. No. 51,768
Claims priority, application Germany, July 10, 1969, P 19 34 912.3
Int. Cl. E05f *3/20*
U.S. Cl. 16—55 **6 Claims**



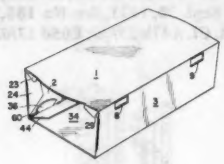
A closing device for doors and analogous structural elements has an elongated housing in which a slide is longitudinally movable in a predetermined path between a rest position and a working position. A biasing arrangement permanently urges the slide to its rest position and connecting means connects the slide with a structural element capable of moving between a closed and an open position so that the slide moves toward working position as the structural element moves away from its closed position. An elastomeric braking element is positioned in the path of the slide and serves to abuttingly engage the slide and brake the movement of the same in response to the slide approaching its working position.

3,701,181

PANEL INTERLOCKING MEANS AND METHOD

Joseph H. Lock, Mableton, Ga., assignor to The Mead Corporation

Filed Jan. 23, 1970, Ser. No. 5,271
Int. Cl. A44b *17/00*, *19/00*; B65d *5/10*
U.S. Cl. 24—204 5 Claims



A pair of angularly related panels are interlocked by providing a plurality of locking slots formed along a fold line adjoining one edge of one of the panels and an associated guide panel together with a plurality of locking tabs foldably joined to an edge of the other panel. The slots are configured to extend into the guide panel and define entry tabs integral with the associated panel and the slots are arranged to extend into that panel along an angular fold line. When inserting the locking tabs into the associated locking slots the guide panel is first moved into normal relationship with respect to its associated panel and the other panel is bowed in such a way as to impart bodily rotation in sequence to the locking tabs whereby the dimension of the locking tab in the general direction of the locking slot is reduced following bowing to facilitate entry of the lock and the panel is restored to a planar condition upon completion of a locking operation so as to rotate the locking tabs sequentially to cause a larger dimension of the tab to become aligned with the general direction of the slot.

ERRATUM

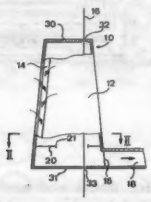
For Class 24—117 see:
Patent No. 3,701,572

3,701,182

METHOD AND APPARATUS FOR TREATMENT OF AN ENDLESS FIBER STRAND OR THE LIKE

Hermann Gasser, and Hansruedi Hotz, both of Zurich, Switzerland, assignors to Luwa AG, Zurich, Switzerland

Filed July 27, 1970, Ser. No. 58,520
Claims priority, application Switzerland, July 30, 1969, 11583/69
Int. Cl. D06c *1/06*
U.S. Cl. 28—59 12 Claims



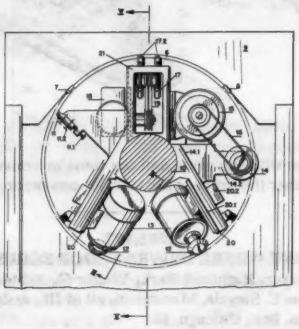
There is disclosed a method and apparatus for the treatment of an endless fiber strand by means of at least one gas current serving as a carrier medium, the direction of flow of this gas extending at an angle to the path of movement of the fiber strand, the gas current flowing past a section of predetermined length of the path of travel of the fiber strands. According to the invention a vortex or spin flow is imparted to the gas, the fiber strand being guided so as to pass near the axis yet outside of the core region through the vortex flow.

3,701,183

FINISHING UNIT FOR STEREO PLATES

Roland von Angerer, D-8702 Veitshochheim bei Wurzburg, and Witmar Gillig, D-8702 Hettstadt bei Wurzburg, both of Germany, assignors to Schnellpressenfabrik Koenig & Bauer Aktiengesellschaft, Wurzburg, Germany

Filed May 22, 1969, Ser. No. 826,831
Claims priority, application Germany, June 20, 1968, P 17 61 648.7
Int. Cl. B23p *17/00*
U.S. Cl. 29—21 7 Claims



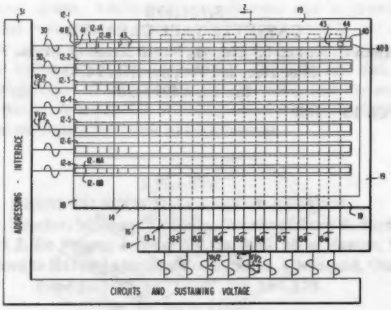
A finishing unit for stereo plates is provided. In one form, the curved stereo plate or plates are stationary and they are of such large radius that within the curvature there is not only mounted the plate feeding and delivery mechanism, the scraping knives, the severing tools, but also the milling cutters and their drives for producing internal lock-up grooves running in circumferential direction. The other form is the mounting of the curved stereo plates within a large radius cylinder that has rotating means while all the tools are mounted therewithin in a stationary manner.

3,701,184

METHOD OF INCREASING LIGHT TRANSMISSION EFFICIENCY OF GAS DISCHARGE DEVICE

John D. Grier, Temperance, Mich., assignor to Owens-Illinois, Inc.

Division of Ser. No. 812,801, April 2, 1969, Pat. No. 3,603,836. This application May 4, 1971, Ser. No. 140,223
Int. Cl. H01j *9/18*, *9/36*
U.S. Cl. 29—25.16 8 Claims



There is disclosed a method of increasing the light transmission efficiency of a gas discharge device and assuring the electrical continuity of non-transparent printed conductors in the device, the conductors comprising transversely oriented row and column conductor arrays. The conductors of a conductor array on a plate forming the viewing side of the device are

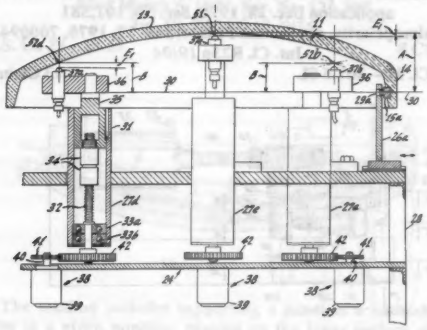
formed by sets of coplanar conductor elements spaced apart so that when a discharge occurs, an observer sees more of the center of the discharge which would ordinarily be partially hidden by a solid conductive line on the viewing side of the device. Likewise the conductor elements of a set may be connected at regular intervals to provide a plurality of electrically parallel routes for conduction in case a section of a conductor element of a set is discontinuous. The gas discharge is more visible since the applied field between selected conductor elements is across two conductors which are not congruent as seen by the observer.

3,701,185

METHOD OF ASSEMBLING A MASK WITH A FRAME ASSEMBLY FOR MOUNTING IN A CATHODE-RAY TUBE USING A REMOTE ASSEMBLY POSITION

Marinus Van Renssen, Lancaster, Pa., assignor to RCA Corporation

Filed Jan. 18, 1971, Ser. No. 107,053
Int. Cl. H01j *9/18, 9/36*
U.S. Cl. 29—25.15 **2 Claims**



The method includes locating three frame-positioning points on a faceplate panel and measuring the panel contour at at least four spaced points on a circle of given radius at a first spacing with respect to the frame-positioning points. Then, at a remote location, (a) a frame assembly is oriented on three reconstructed frame-positioning points which are in substantially the same geometric relationship with respect to one another as are the frame-positioning points on the faceplate panel, (b) signals are generated related to the position of the measured contour of the panel, and (c) the signals are utilized to position four mask supports in substantially the same geometric relationship with respect to one another as are the measured contour points but at a second spacing with respect to the reconstructed frame-positioning points. Then, the contour of the mask is conformed to the contour established by the mask supports. With the mask conformed to the contour of the mask supports, the mask is permanently attached to the frame.

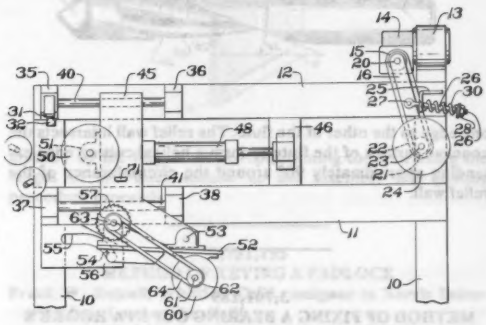
A particular embodiment of the method also includes measuring the contour of the faceplate panel substantially at the center of the panel, measuring the contour of the mask substantially at the center of the mask and adjusting the second spacing to obtain a desired center spacing between the mask and panel when the mask is mounted in the panel while maintaining the mask conformed to the contour established by the mask supports.

3,701,186

TRIMMING MACHINE

Mathew Kuts, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Feb. 18, 1971, Ser. No. 116,455
Int. Cl. B29h *7/22, 3/06*
U.S. Cl. 29—33 A **13 Claims**



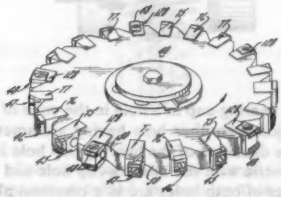
A trimming machine having a pair of cutters which trim the respective sides of a V-belt in cooperation with a retractable rotary cutter that operates on the smaller surfaces of the V-belt parallel surfaces when viewed in cross section, to provide a more uniform and a controlled dimensional core for a V-belt.

3,701,187

SLOTTING CUTTER AND INDEXABLE INSERTS THEREFOR

Donald S. Erkfritz, Rockford, Ill., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.

Filed Dec. 15, 1970, Ser. No. 98,235
Int. Cl. B26d *1/00, 1/12*
U.S. Cl. 29—95 **20 Claims**



Ribbed cutting inserts providing scalloped cutting edges are spaced angularly around the periphery of a supporting disk and are staggered relative to one another along the axis of the disk to remove laterally spaced chips from the bottom of the slot while the sides of the slot are face milled by side cutting inserts spaced angularly from the ribbed inserts.

3,701,188

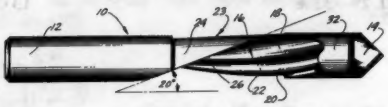
HELICALLY FLUTED ROUTER BIT

Harry W. Wall, Glendora, and Eugene W. Wall, Claremont, both of Calif., assignors to Wall Machine Works, El Monte, Calif.

Filed Jan. 14, 1971, Ser. No. 106,368
Int. Cl. B26d *1/12*
U.S. Cl. 29—103 A **10 Claims**

A router bit has an elongated cylindrical body with a closed helical flute having a concave wall surface merging into a convex wall surface. The width of the flute spans approximately half the circumference of the body, with the flute being formed by a single mill cut from a rotary mill cutter. A recess is formed in the unfluted portion of the body by holding the

body against the cutting edge of the rotary grinding wheel and rotating it so the recessed portion forms a substantially cylindrically curved peripheral relief wall encircling the body from

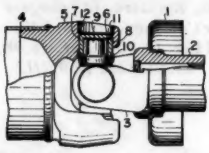


one edge to the other of the flute. The relief wall intersects the concave surface of the flute to form a helical cutting edge extending approximately 90° around the circumference of the relief wall.

3,701,189
METHOD OF FIXING A BEARING CUP IN A HOOKE'S TYPE UNIVERSAL JOINT

Yoji Kadono; Yukio Ogasawara, and Keizo Kamo, all of Totota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed May 19, 1971, Ser. No. 144,749
Claims priority, application Japan, May 21, 1970, 45/42835
Int. Cl. B23p *11/00, 19/00*
U.S. Cl. 29—148.4 A 7 Claims



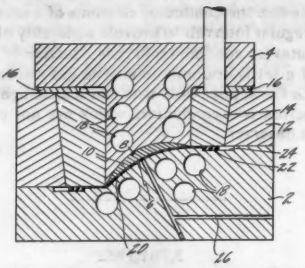
In securing a bearing cup in a hole in the yoke of a Hooke's type universal joint, another hole having a diameter slightly greater than the diameter of the bearing cup hole is drilled in the yoke concentric with the bearing cup hole and to a depth so that the bases of both holes are in a common plane. After inserting the bearing cup into its hole so that its end is spaced a short distance from the common plane of the bases of the holes, a tool having a diameter slightly greater than the diameter of the bearing cup hole is positioned within the other hole and is rotated while it exerts pressure against the surface of the yoke in the common plane of the bases of the holes for deforming the wall of the bearing cup hole inwardly between the common plane and the end of the bearing cup for securely fixing the bearing cup in place.

3,701,190
APPARATUS FOR AND THE METHOD OF COMPACTING AN IRREGULARLY SHAPED ARTICLE

Hilton F. Stone, Jr., Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed April 7, 1971, Ser. No. 131,968
Int. Cl. B21k *3/04*
U.S. Cl. 29—156.8 5 Claims

An apparatus for use in and a method of compacting an article such as a fan or compressor blade made up of plies of a composite of high strength fibers in a metallic matrix with heat applied during the compacting in which a fluid pressure is ap-

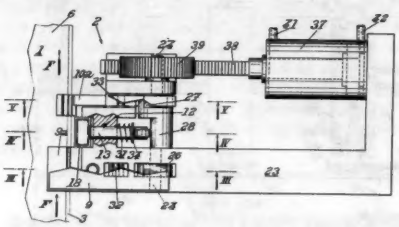


plied to the article during the heating to assure a complete compaction and a removal of any voids in the article.

3,701,191
APPARATUS FOR ASSEMBLING A SLIDER ON A FASTENER STRIP

Leon Ker Laguerre, Boulogne-sur-Seine, France, assignor to Minigrip, Inc., Orangeburg, N.Y.

Continuation-in-part of Ser. No. 770,023, Oct. 23, 1968. This application Dec. 28, 1970, Ser. No. 101,581
Claims priority, application France, Jan. 12, 1970, 7000944
Int. Cl. B23p *19/04*
U.S. Cl. 29—207.5 SL 13 Claims



A device for installing sliders over the edge of continuous rib and groove type plastic fastener members with the sliders having a back and sides projecting downwardly and spaced closer together at a closing end to join the rib and groove fastener members and spaced further apart at an opening end to permit separation of the fastener members with a leg on the back at the opening end of the slider, installing means for moving a slider from an engagement location spaced from the fastener members to an installed position with the sides of the slider straddling the fastener members and the leg between the fastener members, and including first means holding the fastener members separated at the opening end of the slider and second means holding the fastener members together at the closing end of the slider.

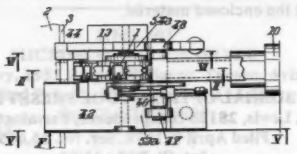
3,701,192
MECHANISM FOR ASSEMBLING SLIDERS FOR INTERLOCKING FASTENER STRIPS

Leon Ker Laguerre, Boulogne-sur-Seine, France, assignor to Minigrip, Inc., Orangeburg, N.Y.

Continuation-in-part of Ser. No. 770,023, Oct. 23, 1968. This application Dec. 28, 1970, Ser. No. 101,582
Claims priority, application France, Jan. 26, 1970, 7002667
Int. Cl. B23p *19/04*
U.S. Cl. 29—207.5 SL 14 Claims

A mechanism for positioning sliders on releasably interlocking rib and groove flexible plastic fasteners which operates to clamp the fastener closed at a closing end of the

slider and hold the fastener with the profiles open at the opening end of the slider and press the slider from an engagement position onto the fastener to an operative position with the legs of the slider straddling the rib and groove closure. The mechanism includes a pusher with alternating movement from



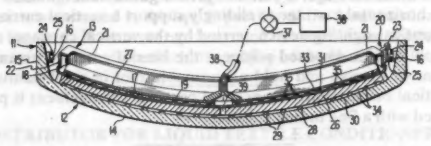
a slider engaging position to a slider installing position wherein the pusher places the slider on the fastener strips and includes delivery means for bringing individual sliders to said slider engaging position and drive means operating the pusher and the delivery means in phase.

3,701,193

METHOD OF ASSEMBLING AND MOUNTING AN APERTURE MASK IN A MASK-PANEL ASSEMBLY OF A CATHODE-RAY TUBE USING A FULL SURFACE SPACER

Frank Rowland Ragland, Jr., Lancaster, Pa., assignor to RCA Corporation

Filed March 5, 1971, Ser. No. 121,308
Int. Cl. H01j *9/18, 9/36*
U.S. Cl. 29—25.15 **8 Claims**



The method includes supporting a panel of a cathode-ray tube in a given position, placing on the inner surface of the faceplate a flexible spacer having a predetermined thickness related to the desired spacing *q* between an aperture mask to be assembled with the panel and the faceplate, and then, placing the mask against the flexible spacer. The spacer is forced against the inner surface of the faceplate and the mask is forced against the spacer. The mask, frame and frame supports are assembled and detachably mounted on the studs of the panel. In a particular form of the method, the mask is detachably mounted in the panel by welding the support members to the frame and by welding the mask to the frame while maintaining the mask conformed to the desired contour at the desired spacing *q*.

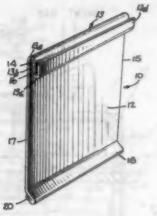
3,701,194

TOOL FOR ASSEMBLING DUCTS HAVING PITTSBURGH TYPE JOINTS

Erwin Richard Widman, 86-15 Elmhurst Avenue, Elmhurst, N.Y.

Filed Dec. 18, 1969, Ser. No. 886,076
Int. Cl. B25b *27/14*
U.S. Cl. 29—278 **3 Claims**

A tool for assembling sections of sheet metal duct. The tool includes a substantially flat body which is substantially vertically disposed during use and a horizontal top marginal edge in the form of a pair of vertically disposed reverse folds defining two laterally adjacent and longitudinally extending channels for receiving the respective parts of the duct being joined. A bottom marginal edge, parallel to the upper edge, is angularly disposed with respect to the body of the tool so that the forward and rearward ends of the tool body portion are spaced laterally away from the duct side wall to be conveniently



grasped by the fingers when repositioning the tool along the length of the duct section as the assembly and joining procedure proceeds.

3,701,195

METHOD OF KEYING A PADLOCK

Frank W. Russell, Whittier, Calif., assignor to Norris Industries, Inc., Los Angeles, Calif.

Filed April 23, 1971, Ser. No. 136,976
Int. Cl. B23p *19/00*; B23q *17/00*
U.S. Cl. 29—434 **5 Claims**

A series of sheet metal plates are formed into laminations and openings are provided in them so that when they are stacked together the openings form a chamber of such size and configuration that it snugly accommodates the housing of a key-actuated mechanism. The cylinder plug has a keyway formed in it of such cross-sectional shape that it can receive keys of a number of different kinds. Appropriate pin tumblers are matched to a selected key and the mechanism then assembled in the padlock made up of the laminations, with the laminations set in a convenient jig and riveted together by hand.

3,701,196

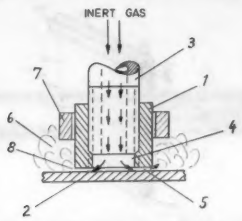
METHOD OF MAKING WELDED JOINTS

Wilhelm Kiesow, Hagen, and Gerhard Heuser, Dortmund, both of Germany, assignors to Friedrich Uhde GmbH, Dortmund, Germany

Filed July 16, 1970, Ser. No. 55,395
Claims priority, application Germany, Aug. 21, 1969, P 19 42 572.0
Int. Cl. B23k *5/22, 31/02*
U.S. Cl. 29—494 **5 Claims**

Method of making welded joints between metals of different heat conductivity, and which have a tendency to form intermetallic phases when contacted at high temperatures, such for

example as titanium and copper, and titanium and iron. The metal of the better heat conductivity is preheated and the



other metal is protected from premature heating by an inert gas stream. Both metals are separated from each other during preheating and that portion ahead of the welding zone.

3,701,197

METHOD OF PROVIDING A PARTITION WALL IN THE CYLINDER OF A TELESCOPIC SUSPENSION UNIT

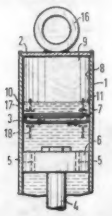
Rudi Vers, Heindenfeld, Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Germany

Filed May 11, 1971, Ser. No. 142,131

Claims priority, application Germany, May 14, 1970, P 20 23 578.3

Int. Cl. B21d *39/00*; B23p *11/00*

U.S. Cl. 29—522 **1 Claim**



A radial partition wall member is fixedly installed in the cylinder cavity of a telescopic suspension unit by positioning the wall member in the cylinder and axially compressing a hollow bead along the edge of the wall member until it spreads radially into frictional clamping engagement with the inner cylinder surface. Application of this method to the construction of two suspension units is described.

3,701,198

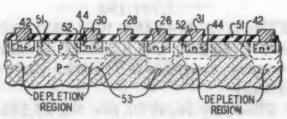
MONOLITHIC INTEGRATED CIRCUIT STRUCTURES AND METHODS OF MAKING SAME

Vincent J. Glinski, Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 786,228, Dec. 23, 1968, Pat. No. 3,614,555. This application Aug. 14, 1970, Ser. No. 63,885

Int. Cl. B01j *17/00*

U.S. Cl. 29—578 **14 Claims**



An annular PN junction in conjunction with a relatively high resistivity substrate enables improved means for isolating functional elements in a monolithic semiconductor integrated circuit. In a semiconductor wafer, localized emitter zones and collector zones extend to a common depth from the surface of the wafer. The collector zone is annular in shape and encloses laterally the emitter zone. The resistivities and spacings of the regions in the wafer are such that with the annular PN junction reverse-biased, the depletion region therefrom extends completely underneath the material enclosed by the annular zone and thereby provides electrical isolation for a functional element in the enclosed material.

3,701,199

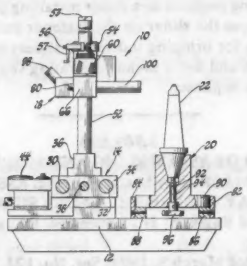
BIAXIAL OPTICAL TOOL PRESETTER

Hubert G. Lewis, 28128 Independence, Farmington, Mich.

Filed April 9, 1970, Ser. No. 26,869

Int. Cl. B27g *23/00*

U.S. Cl. 33—185 R **16 Claims**



A biaxial optical tool presetting apparatus including a base, a pair of horizontal guide bars which slidingly support a horizontal carriage, a pair of vertical guide bars mounted on the horizontal carriage to slidingly support a vertical carriage, an optical sighting device carried by the vertical carriage, and a tool holder disposed adjacent the biaxial carriage arrangement to receive and hold a presetable tool in a substantially vertical orientation. The vertical carriage arrangement is provided with a fine tuning feature.

3,701,200

GYROSCOPIC INSTRUMENT

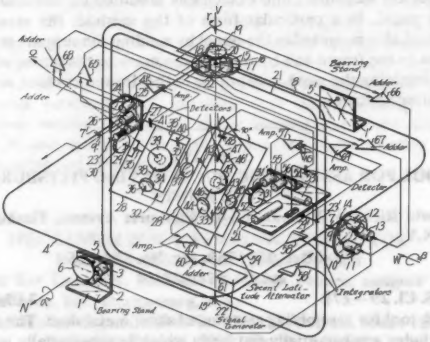
Takeshi Hojo, Fujisawa, Japan, assignor to Kabushikikaisha Tokyo Keiki Seizosho, Tokyo, Japan

Filed April 8, 1970, Ser. No. 26,640

Claims priority, application Japan, April 15, 1969, 44/29579

Int. Cl. G01c *19/38*

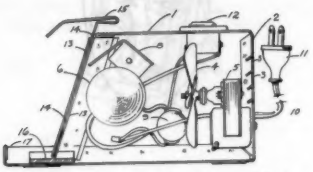
U.S. Cl. 33—321 **1 Claim**



A gyroscopic instrument having a gyro platform pivotable about three shafts perpendicular to one another and defining a plane stable relative to inertial space and including means for holding the first shaft of the gyro platform substantially horizontal and means for generating a signal corresponding to

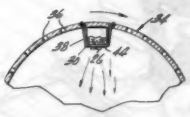
the differential with respect to time of inclination of the gyro platform about the first shaft relative to a horizontal plane, and means for causing the gyro platform to rotate about a shaft perpendicular to the first shaft in response to the signal from the signal generating means.

3,701,201
MICROSCOPE SLIDE DRYER
James A. Drury, 1951 Benson Highway, Tucson, Ariz.
Filed Feb. 10, 1971, Ser. No. 114,227
Int. Cl. F26b *19/00*
U.S. Cl. 34—60 **6 Claims**



The dryer of the present invention comprises a substantially rectangular housing open at its front end and its rear wall is provided with one or more openings for the ingress of air. The front end is adapted to receive and hold in locked position a microscope slide tray, the locking being provided by a pair of slidably mounted legs carried by the front ends of the housing side walls. The upper ends of the legs are attached to a transverse shield. An electric fan is mounted in the rear portion of the housing and an electric light bulb, or other suitable heat source, is mounted in the upper portion of the front portion of the housing. A transverse heat and air baffle or shield is mounted intermediate the bulb and top of the housing.

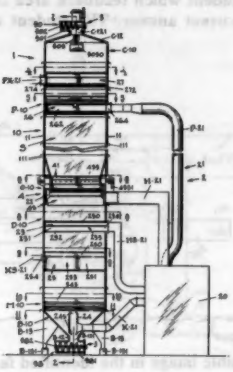
3,701,202
DISTRIBUTOR FOR LIQUID TEXTILE CONDITIONERS
Russel Edward Compa, 24 McClellan Terrace, West Orange, N.J., and Marvin Liebowitz, 14 Barlow Road, Edison, N.J.
Filed April 13, 1971, Ser. No. 133,613
Int. Cl. F26g *25/14*
U.S. Cl. 34—72 **3 Claims**



A distributor for liquid textile conditioners for use in combination with a dryer drum comprising an elongated container detachably secured to the drum. The container has a removable closure for filling of the container will a textile conditioning substance. The container has a series of outlet apertures thereon and is covered with a porous material for distributing the conditioning substance.

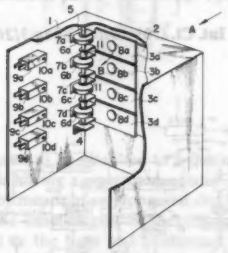
3,701,203
PARTICULATE MATERIAL DRYING APPARATUS
Robert J. Anderson, Toledo, Ohio, assignor to The Andersons, Maumee, Ohio
Division of Ser. No. 856,009, Sept. 8, 1969, Pat. No. 3,645,006. This application Nov. 22, 1971, Ser. No. 201,092
Int. Cl. F26b *7/00, 17/12*
U.S. Cl. 34—170 **23 Claims**

An apparatus for drying particulate material, particularly that which like grain, has a critical degree of heat tolerance, while the material forms and moves through a bed of material,



utilizing a heated dry gaseous medium and passing the same to and in direct contact with the bed forming and traversing material.

3,701,204
EDUCATIONAL PROJECTOR HAVING MOVABLE SHUTTERS
Kozo Yamamoto, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 9, 1970, Ser. No. 79,565
Claims priority, application Japan, Oct. 11, 1969, 44/81421
Int. Cl. G09b *3/06*
U.S. Cl. 35—9 E **4 Claims**

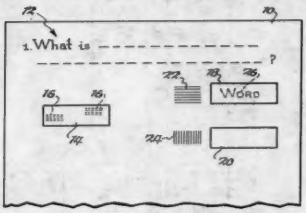


A projector in which a picture including a plurality of problems and answers is projected on a screen, but the answers are concealed from a viewer, the result of the choice being electrically detected at the same time as operating to reveal the answers.

3,701,205
RESPONSIVE ANSWER SYSTEM
Stanley Wolf, Pleasantville, N.Y., assignor to Docent Corporation, Pleasantville, N.Y.
Filed Sept. 27, 1971, Ser. No. 184,033
Int. Cl. G09b *3/02*
U.S. Cl. 35—9 G **11 Claims**

A teaching device including a work sheet on which are visibly printed one or more outlined response areas in which a student is expected to write his answer to questions put to him. In addition, two or more feedback areas are visibly outlined on the same or a separate work sheet corresponding to each outlined response area. In a predetermined one of the feedback areas the correct answer is printed as an invisible image. The student writes his answer with a bullet point marker contain-

ing a chemical which makes the response visible. Writing the response also develops and makes visible segments of certain preprinted symbols or markings in the response area which identify to the student which feedback area contains the invisibly printed correct answer. The student may thereafter



develop the invisible image in the identified feedback area to confirm the correctness of his own response. The latent symbols in the response area are randomly spaced to maximize the chance of being developed when any answer is written but to minimize the chance of being developed by only a few inconspicuous dots of the marking device in an attempt to cheat.

3,701,206

WEAPON TRAINING SYSTEMS

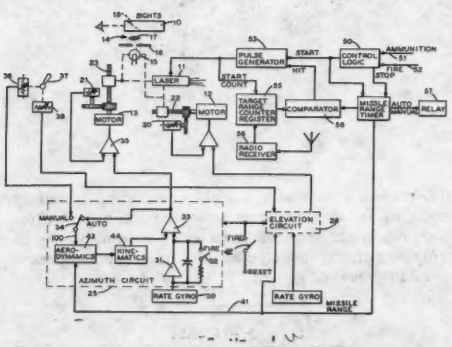
Peter Thomas Ormiston, Farnborough, England, assignor to The Solartron Electronic Group Limited, Farnborough, England

Filed Feb. 24, 1970, Ser. No. 13,410

Claims priority, application Great Britain, Feb. 27, 1969, 10,663/69

Int. Cl. G09b 9/00; F41g 3/26

U.S. Cl. 35—25 **27 Claims**



A weapons-effect simulating system especially suitable for use with missile-launching weapons such as bazookas. The system includes sighting means for aiming the launcher at a target and a source of electromagnetic radiation having its orientation or direction changed with respect to the sighting means by generated signals applied to a control system coupling the sighting means and the source. Subsystem apparatus for generating the control signals include aerodynamic and kinematic simulation circuits; the output of the aerodynamic circuit representing the dynamic response of the simulated missile to, for example, changes in sidewise acceleration, and the output of the kinematic circuit representing, for example, random flight disturbances and crosswinds.

3,701,207

SCHIFFLI-EMBROIDERED PANEL AND KIT CONTAINING THE SAME

Erich Henry Conrad, Box 537, Weaverville, N.C.

Filed July 21, 1970, Ser. No. 56,924

Int. Cl. G09b 11/10

U.S. Cl. 35—26 **5 Claims**

An ornamental article consisting of a fabric panel with a Schiffli-embroidered design formed thereon; the fabric being treated to reject fluid coloring material which is absorbable by the embroidery yarn. The design is embroidered in monocolored yarn and the coloring thereof is done as a do-it-yourself project by the purchaser of the panel. Commercially, such panel is packaged in a kit with the coloring materials, applicators, instructions, a frame and framing accessories for the panel.

3,701,208

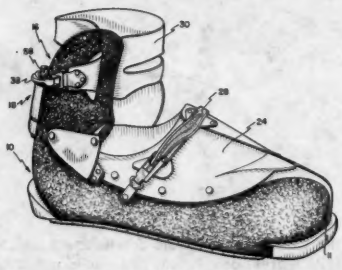
SKI BOOT

Melvin W. Dalebout, 3661 Ceres Dr., Salt Lake City, Utah

Continuation-in-part of Ser. No. 726,094, May 2, 1968, Pat. No. 3,521,385, Continuation-in-part of Ser. No. 8,547, Feb. 4, 1970. This application July 16, 1970, Ser. No. 55,435

Int. Cl. A43b

U.S. Cl. 36—2.5 AL **9 Claims**



A ski boot which includes a low cut rigid oxford type lower shell having spaced sidewalls affixed to a sole, a rigid ankle cuff having sidewalls connected together in a spaced relationship with a rear connecting wall and secured to the sidewalls of the lower boot wherein the ankle of the individual using the boot passes through the open front portion of the ankle cuff when the boot is placed onto and removed from the individual's foot, and strap means connected to the opposite sidewalls of the ankle cuff across its open front end for securing the individual's ankle within the cuff. The sidewalls of the ankle cuff can be connected to the lower boot to pivot back and forth thereon in a direction substantially parallel with the longitudinal axis of the boot and at the natural pivot point of the individual's ankle.

3,701,209
METHOD OF FRAMING A PICTURE AND PRODUCT THEREOF

Earl W. Kobusch, 6001 Claremont, Kansas City, Mo.

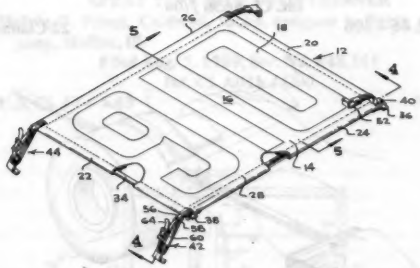
Filed May 10, 1971, Ser. No. 141,867
Int. Cl. G09f 1/12
U.S. Cl. 40—152.1 7 Claims

A photographic film pack container assembly is converted into a frame for photographs and the like by inserting the picture in the framing opening, maintaining the picture in position by the pack retainer, and securing the back cover to the assembly only at one end thereof and at an angle to the balance of the assembly, thereby providing leaning support for vertical pictures. In the alternative, pressure tines in the back cover are bent rearwardly, providing leaning support for horizontal pictures.

3,701,210
TEMPORARY VEHICLE MARKINGS

George E. Smith, Box 354, River Avenue, Island Heights, N.J.

Continuation-in-part of Ser. No. 855,478, Sept. 5, 1969, abandoned. This application June 9, 1970, Ser. No. 44,703
Int. Cl. G09f 7/00
U.S. Cl. 40—129 C 3 Claims



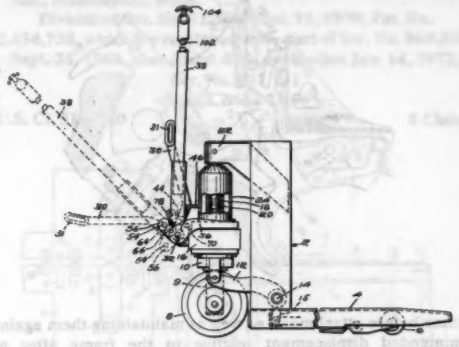
Identification means for vehicles, the identification means comprising indicia bearing panels with rigidifying slats adapted for temporary mounting on vehicle roofs, trunk deck lids, hoods, or the like, by adjustable straps.

3,701,211
MEANS FOR CONTROLLING PALLET TRUCK FOOT PEDAL POSITION

Eric Best, Welland, Ontario, Canada, assignor to Hyster Company, Portland, Oreg.

Filed Nov. 4, 1969, Ser. No. 873,821
Int. Cl. B62d 21/18
U.S. Cl. 280—43.12 9 Claims

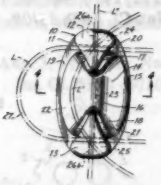
In a hand operated hydraulic type pallet truck, means actuated by limited downward swinging movement of the truck handle from vertical position to cause a pivoted foot treadle originally in a position substantially parallel to the handle to swing downwardly through a greater arc to a position where the operator may readily place his foot thereon to actuate the hydraulic truck lifting means.



3,701,212
SALT WATER SINKER

Joe L. Gilliam, Tampa, Fla., assignor to Mary E. Melvin

Filed Jan. 15, 1970, Ser. No. 3,172
Int. Cl. A01k 95/00
U.S. Cl. 43—44.87 6 Claims



A sinker designed to be attached to a fishing line or leader comprising a base having a crown arranged in partially spaced relation thereto by means of an elongated slot formed between the crown and the base. A pair of locking arms are also integrally attached to the base and positioned in overhanging relation to the crown. Each of the arms further include an arm slot co-axially aligned with the elongated slot in the crown such that all of the slots are positioned to slidingly engage the line or leader on which the sinker is mounted. Both arms and the crown can be crimped over the respective slots into engagement with the base to prohibit relative movement of the sinker to the line or leader.

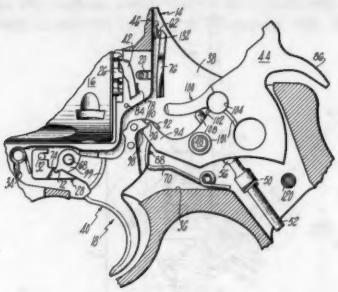
3,701,213
REVOLVER FIRING MECHANISM WITH SINGLE ACTION AND DOUBLE ACTION MOVEMENT

Karl R. Lewis, Wethersfield, Conn., assignor to Colt Industries Operating Corp., Hartford, Conn.

Filed March 18, 1969, Ser. No. 843,869
Int. Cl. F41c 1/00
U.S. Cl. 42—65 5 Claims

A firing mechanism incorporating an improved sear nose on a trigger providing both single and double action movements, a single leaf spring positioning both a hand and a connector during such movements, a detachable sideplate having a recess providing a connector guide surface, and a depressible hammer strut having an integral hub bearing portion pivotally supported in captured relation to the hammer. A multi-func-

tion fastener arrangement removably secures the sideplate to the frame and provides for locating stocks in relation to the



frame before attachment, as well as maintaining them against unintended displacement relative to the frame after attachment.

ERRATUM

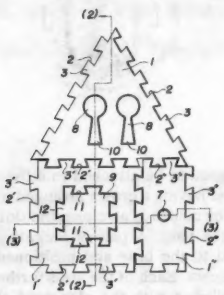
For Class 43—44 see:
Patent No. 3,701,212

3,701,214

FLEXIBLE, SOFT, FOAM RESIN ASSEMBLING PIECES

Tsuneo Sakamoto, Tokyo, Japan, assignor to Kyoikushuppan Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1970, Ser. No. 100,663
Int. Cl. A63h *33/08*
U.S. Cl. 46—25 **3 Claims**



Assembling of toys in which, assembling pieces are obtained by cutting soft, flexible, elastic, foam synthetic resin material in suitable shapes, and more particularly to such toys wherein circumferential margin of said assembling pieces are cut off at a certain interval in such a manner that a cut-off portion and a setting protrusion, whose shape conforms to that of said portion, alternate with each other, and inlaying pieces are punched or cut out from the assembling pieces.

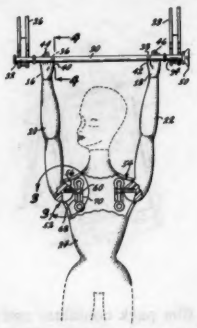
3,701,215

DOLL LIMB JOINT FOR SELECTIVELY ALLOWING FREE ROTATION OF LIMB OR RESISTING SAME

Gabriel Marason, Jr.; Austin C. Ma, both of Los Angeles, and Brian G. Osborne, Manhattan Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Oct. 5, 1971, Ser. No. 186,626
Int. Cl. A63h *3/46, 13/12*
U.S. Cl. 46—163 **4 Claims**

A trapeze apparatus and doll wherein the doll may be played with independently of the trapeze apparatus and it then has a natural appearance and poseable arms. The trapeze has a rotatably mounted bar with a pair of holes for receiving thumbs of the doll hands so that the slightly cupped hands of the dolls can partially encircle and hold onto the bar, the doll hands having a natural appearance when the doll is played with independently of the trapeze. The doll arms have connectors joining them to the doll body, which can be snapped



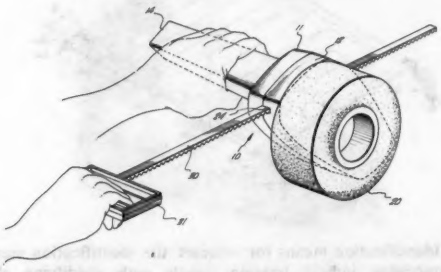
between a first position for free swinging of the arms on a trapeze and a second position for resisting swinging to enable posing of the arms. Each connector includes a shaft with an enlarged end that can be held in a swivel joint on the body wherein the arm bears against part of the body to prevent swinging, or that can be unsnapped outwardly to another position wherein the inner end of the arms do not contact the body and therefore are free to swing.

3,701,216

WHEEL APPARATUS AND RACK AND PINION LAUNCHER ENABLING REPEATED STROKES AND HAVING AUTOMATIC EJECTOR

Jay Smith, III, Pacific Palisades; Gerald W. Schmidt, Woodland Hills, and Lawrence T. Jones, Pacific Palisades, all of Calif., assignors to California R & D Center, Palisades, Calif.

Filed Dec. 22, 1971, Ser. No. 210,730
Int. Cl. A63h *1/04*
U.S. Cl. 46—206 **22 Claims**



A toy apparatus is disclosed in which a launcher is utilized to propel a wheel. The launcher comprises an output shaft upon which the wheel is mounted. The shaft is rotatably driven by a gear train with the input gear thereof being connected to a slidable gear rack. The gear rack is hand manipulated to slide within a guideway formed in the launcher. The input gear is floatingly mounted within the launcher to positively drive the gear train in the forward direction, when the gear rack travels in one direction along the guideway, and to move out of engagement with the gear train when the gear rack moves in the other direction along the guideway. This uncoupling movement enables the gear rack to repeat its drive cycle while the gear train is still moving in the forward

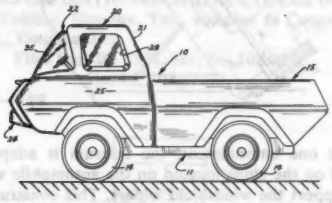
direction. In this manner, the gear rack need not be completely withdrawn from the guideway to repeat its drive cycles. These repeated drive cycles greatly increase the rotational speed of the output shaft before actual launching. A wheel ejector is pivotally mounted adjacent the output shaft and is slidingly coupled to the gear rack to pivot and force the wheel off of the shaft when the gear rack is finally withdrawn completely from the guideway.

3,701,217

TOY VEHICLE CAB ASSEMBLY

Douglas S. Jensen, Mound, Minn., assignor to Tonka Corporation, Mound, Minn.

Filed June 7, 1971, Ser. No. 150,583
Int. Cl. A63h *17/26*
U.S. Cl. 46—222 **2 Claims**



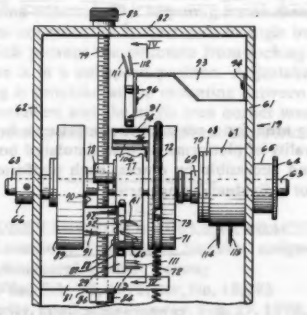
A toy vehicle cab having an open front outer cab shell mounted on a vehicle chassis, a passenger compartment assembly comprising a window forming bubble of transparent material, a seat insert within the bubble, and a grill member locking the insert within the bubble so that said assembly may be inserted as a unit rearwardly into the shell through the open front thereof, and said grill member having latch means for automatically locking the assembly in the shell. The structure also provides for partial automatic locking of the cab shell to the chassis.

3,701,218

SPRAY TYPE ROW CROP THINNER

Melvin E. Priest, Caldwell, Idaho, assignor to Deere & Company, Moline, Ill.

Filed Aug. 7, 1969, Ser. No. 848,161
Int. Cl. A01b *41/00*
U.S. Cl. 47—1.43 **9 Claims**



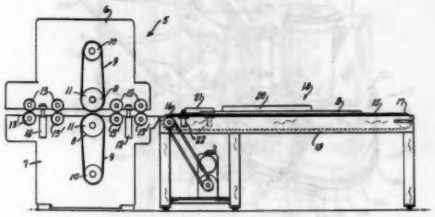
An agricultural machine which is moved along the ground over a row of plants and which has a plant detecting means for sensing the presence of the plants and which controls a herbicide sprayer so as to selectively destroy plants in the row. The distance of plants left and the distance of plants destroyed may be adjusted.

3,701,219

APPARATUS FOR EFFECTING SUPERIOR SANDING

Lambert S. Sternal, Wayzata, Minn., assignor to Timesavers, Inc., Minneapolis, Minn.

Division of Ser. No. 71,546, Sept. 11, 1970, Pat. No. 3,654,738, which is a continuation-in-part of Ser. No. 860,860, Sept. 25, 1969, abandoned. This application Jan. 14, 1972, Ser. No. 217,741
Int. Cl. B66c *23/60*
U.S. Cl. 51—140 **6 Claims**



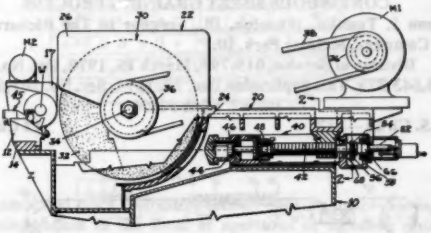
A sanding machine with complementary upper and lower sanding heads which have fast moving abrasive belts trained about and constantly shifted edgewise along superimposed contact drums between which the work is fed in a manner whereby the parallel narrow zones of work performing engagement of the abrasive belts with the opposite sides of the work extend at an oblique angle of not more than 75° to the lengthwise dimension of the work.

3,701,220

ELECTRIC FEED FOR MACHINE ELEMENT

George E. Wespi, Holden, Mass., assignor to Norton Company, Worcester, Mass.

Filed Aug. 3, 1970, Ser. No. 60,288
Int. Cl. B24b *49/10*
U.S. Cl. 51—165.74 **20 Claims**

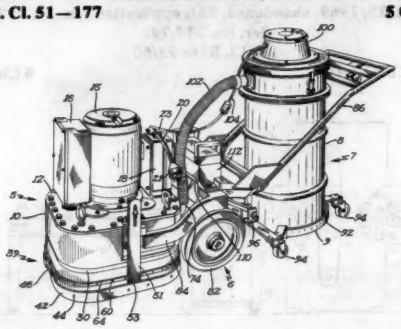


For a movably mounted element of a machine, an automatic feed, electrically energized and driven, including an electric pulse motor connected to produce sequential equal incremental movements of the movably mounted element and electrical control means therefor featuring a constant frequency pulse generator producing a continuous series of electrical impulses, frequency dividers converting the constant frequency electrical impulses into selected different frequencies of electrical impulses, an automatic control system with adjustable means to initiate and to terminate the application of series of electrical impulses to the electric pulse motor in the directional sense and at the frequencies required to produce a predetermined precise movement, wherein the automatic feed may include an electric pulse motor comprising an electric stepping motor and an hydraulic motor selectively operable alone to displace the movably mounted element and automatically operative with and to assist the electric stepping motor.

3,701,221
DRY GRINDING TERRAZZO FLOOR FINISHING MACHINE

Frank P. Vinella, 6732 Pillsbury Avenue, Minneapolis, Minn.

Filed April 7, 1971, Ser. No. 132,147
Int. Cl. B24b *23/00, 55/06*
U.S. Cl. 51—177 5 Claims

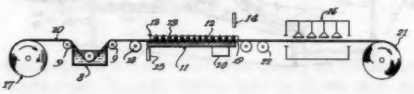


The invention relates to a machine for the dry grinding of terrazzo floors and particularly to the utilization of a vacuum cleaner attachment for the collection and control of dust raised during the grinding operation. This dust comprises fine particles ground from the floor, sand used for dressing the grinding stones and small particles worn from the grinding stones. A chamber of the machine in which the grinding stones are disposed has a vacuum pick-up head and the chamber is formed in part by a loose fitting skirt assembly which is resiliently biased in a downwardly direction. A wear shroud forming the lower part of the skirt assembly is biased into firm engagement with the floor and adjustable vent plates are provided for controlling the flow of air through the chamber. The dust collecting assembly for the machine comprises a drum unit mounted on a wheeled cart which is closely coupled to the machine so that the drum unit is within the lateral confines of the handle of the machine.

3,701,222
CONTINUOUS SHEET GRAINING PROCESS

Reno J. Testolin, Wheaton, Ill., assignor to The Richardson Company, Melrose Park, Ill.

Division of Ser. No. 019,794, March 16, 1970, Pat. No. 3,643,379. This application Dec. 13, 1971, Ser. No. 207,669
Int. Cl. B24b *31/06*
U.S. Cl. 51—317 12 Claims



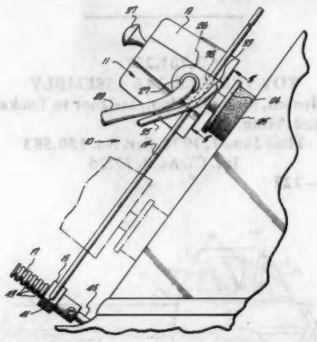
This invention relates to the graining of metal sheet especially of the type employed as the supporting base for lithographic printing plates. More particularly, this invention relates to the continuous ball graining of such metal sheet and processes for effecting such continuous ball graining.

3,701,223
GLASS REFINISHING APPARATUS

Jack Cole, 11646 Cherrylee, El Monte, Calif., and John Robert McIntosh, 13903 Nolandale, Valinda, Calif.

Filed Feb. 5, 1971, Ser. No. 112,967
Int. Cl. B24b *19/00, 7/02, 7/24*
U.S. Cl. 51—241 S 13 Claims

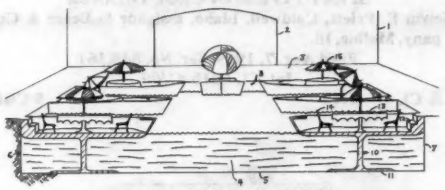
A glass refinishing apparatus is disclosed in which a hydraulically driven buffer is slidably and pivotally guided over the exterior surface of an automobile windshield to produce a smooth and polished finish thereon. The buffer is rotatably mounted on a motor housing that is adapted to be manipulated manually. The motor housing is slidably mounted on a pair of guide rods to enable the buffer to axially traverse along the lengths thereof. The bases of the guide rods are connected to a support arm which in turn is pivotally mounted on a fulcrum. In one embodiment, the fulcrum is adapted to be mounted on the studs located on the automobile which normally support the windshield wipers. This construction enables the buffer to traverse the windshield in an arc similar to the traversal of the windshield wiper. In a second embodiment, the fulcrum is adapted to be mounted on a pair of suction cups in order to be universally mounted on or near any glass surface.



3,701,224
RESTAURANT ARRANGEMENT INCLUDING DINING TABLES ON SIMULATED BOATS

Edna G. Mozier, Box 2493, Charlotte, N.C.

Filed Feb. 12, 1971, Ser. No. 114,965
Int. Cl. E04h *3/16*
U.S. Cl. 52—27 3 Claims



A dining area for a restaurant comprises a body of water and a plurality of platforms such as simulated boats disposed thereon and accessible by diners, each platform supporting facilities for individual dining parties.

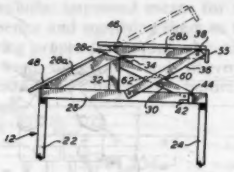
3,701,225
ROOF STRUCTURE WITH STATIONARY AND MOVEABLE SHEATHED SECTIONS

Elmer W. Perry, 31 Fawn Lane, Watchung, N.J.

Filed March 2, 1970, Ser. No. 15,325
Int. Cl. E04b *7/16*
U.S. Cl. 52—71 6 Claims

A truss supported roof structure in substantially completed

form in which a portion of the upper end thereof is hinged and provided with adjustable supporting means whereby said



hinged portion may be adjusted to a lowered position for shipment and raised to final position at the erection site.

3,701,226

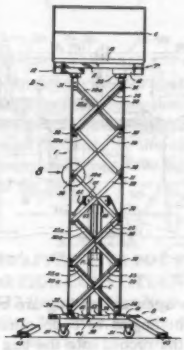
ADJUSTABLE POSITIONABLE STRUCTURAL DEVICE

Junius H. Fulcher, Houston, Tex., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Jan. 20, 1971, Ser. No. 108,094

Int. Cl. E04g *1/22*

U.S. Cl. 52—109 **3 Claims**



A structural device composed of lazy-tong frame members is adjusted to different positions by an enclosed piston, which exerts a force upon the structure in a location providing improved stability in the device while the position is being adjusted. Stabilizer arm members situated substantially parallel to the lazy-tong frame members assist in overcoming twisting forces, and consequent lateral movement, created when the position is being adjusted. The lazy-tong frame members and stabilizer arms are mounted at their ends to angle iron corner members which prevent the structure from locking up when such structure is in a collapsed position. Adjustable tension spring loading is provided at the mounting between the lazy-tong frame members and the angle iron corner members, to assist in overcoming and neutralizing inertia and friction in the structure.

3,701,227

PRESSURE TANK FOR A NUCLEAR REACTOR

Rolf Johan Lenschow, Trondheim, Norway, assignor to Institutt for Atomenergi, Kjeller, Norway

Filed Feb. 27, 1970, Ser. No. 15,092

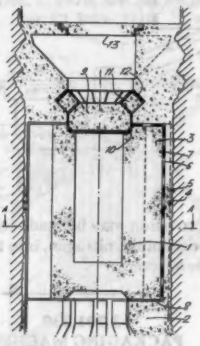
Claims priority, application Norway, Feb. 27, 1970, 826/68

Int. Cl. E04c *3/10*

U.S. Cl. 52—224 **12 Claims**

The invention generally relates to a concrete pressure tank, particularly for a nuclear reactor, which is mounted in a rock shaft and prestressed by means of jacks disposed between the tank and shaft walls, in order to transfer prestressing forces to the tank from the surrounding rock.

A horizontal prestressing of the above type may be combined with a conventional vertical prestressing by means of vertical prestressing cables, or even the vertical prestressing may be accomplished in the above manner by means of jacks



bearing against a filler load on the top of said tank in the shaft.

Said jacks are preferably of a membrane type adapted to be disposed in intervening slots between ribs, moulded either on the external tank wall or the internal shaft wall, and the opposing cylindric inner shaft or outer tank wall, respectively.

3,701,228

DECORATIVE WALL FACING

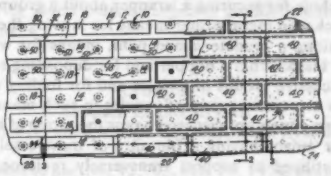
Frank Taylor, 1319 Bernie St., LaSalle, Quebec, Canada

Filed Nov. 5, 1970, Ser. No. 87,161

Claims priority, application Canada, July 23, 1970, 35,782/70

Int. Cl. E04f *13/18*

U.S. Cl. 52—309 **6 Claims**



A simulated brick wall composed of backing panels having retaining means in the form of apertures or adhesive onto which is applied a plurality of discrete brick facings, each of the facings has a peripheral rearwardly extending flange which is adapted to simulate the sides of a brick and including cooperating means for cooperating with the adhesive or apertures to retain the brick facings in position.

3,701,229

METHOD AND APPARATUS FOR SKIN-PACKAGING ARTICLES BETWEEN FILM-ON-FILM

Seymour Zelnick, Orange, N.J., assignor to Weldotron Corporation, Piscataway, N.J.

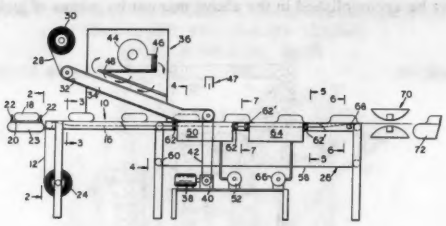
Filed Feb. 19, 1971, Ser. No. 116,769

Int. Cl. B65b *31/04*

U.S. Cl. 53—22 A **11 Claims**

There is provided a continuous motion skin-packaging machine and method for the production of air-evacuated see-

through film-on-film packages of products. One of the film layers is softened by heat and is contoured around the



product. Also, provision may be made for the introduction of an inert fluid, for example, nitrogen, into the package after the removal of air therefrom.

3,701,230

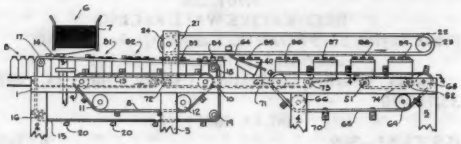
PACKAGING MACHINE

Hermond G. Gentry, Atlanta, Ga., assignor to The Mead Corporation

Continuation of Ser. No. 41,743, June 6, 1970, abandoned, which is a continuation of Ser. No. 706,327, Feb. 19, 1968, abandoned. This application Feb. 1, 1971, Ser. No. 111,726

Int. Cl. B65b *11/10*

U.S. Cl. 53—48 **3 Claims**



A machine for securing a wrapper about a group of articles to be packaged incorporates means for moving the article sin groups along a predetermined path, means for withdrawing wrapper blanks from a hopper and for depositing such blanks atop successive groups of articles and for folding each blank about its associated group of articles in such manner that its bottom lap panels are disposed below the group of articles and conveyor means having a plurality of transversely disposed rods is utilized to support transversely reciprocable blank tightening elements together with blank locking means in the form of support blocks each of which in turn supports a pivotally mounted locking element arranged to engage a fixed cam whereby pivotal locking movement is imparted thereto. In order to withdraw each locking element following completion of a locking operation, a retracting cam is arranged to engage a part of the locking element and to effect withdrawal thereof.

3,701,231

MECHANISM FOR FORMING GUSSET FOLDS IN CONTAINER WRAPPERS

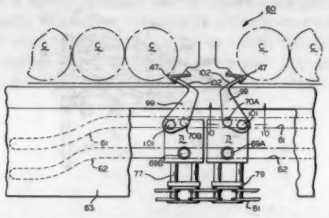
Wendell E. Standley, Lake Forest, Ill., assignor to Container Corporation of America, Chicago, Ill.

Continuation of Ser. No. 2,232, Jan. 12, 1970, abandoned. This application Aug. 25, 1971, Ser. No. 174,984

Int. Cl. B65b *11/08, 21/24*

U.S. Cl. 53—48 **18 Claims**

Mechanism for forming gusset folds in container wrappers which are formed about a moving group of containers. The gusset folds are formed in gusset panels and are employed to stabilize the position of the endmost containers of the wrapped group, and are formed as the wrapper blank moving with the group is wrapped therearound. The mechanism includes a cam and cam follower mechanism so configured that the tip of the folding member at all times engages a fold line of



the gusset panel of the wrapper blank, irrespective of the movement of the gusset panel during the folding of same.

3,701,232

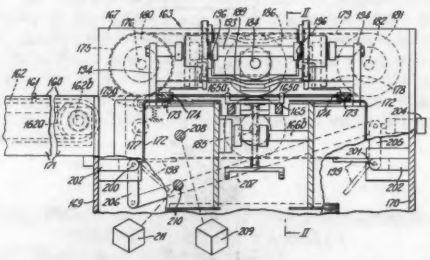
ARTICLE INSERTION DEVICES

David George Parker, 21 Westhall Road, Warlingham, England, assignor to Masson Scott Thrissell Engineering Ltd., Bristol, England

Filed May 5, 1971, Ser. No. 140,506

Int. Cl. B65b *5/04, 43/30*

U.S. Cl. 53—187 **8 Claims**



A record and an open ended bag are conveyed along different paths at right angles to each other, but in the same plane, insertion of the record into the bag taking place at the intersection of the paths. As the bag is being conveyed it passes between a pair of rotatable eccentric suction rollers which grip the front and back faces of the bag respectively and cause the bag to be opened as the surfaces of the rollers move apart, due to the rotation of the rollers.

3,701,233

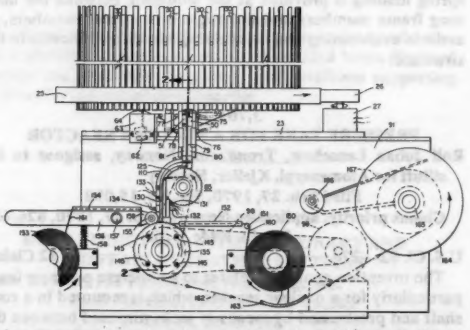
COMPONENT SEQUENCING AND TAPING MACHINE

Franklin P. Luckman, Jr., 1905 Acorn Lane, Abington, Pa.

Filed Dec. 16, 1970, Ser. No. 98,581

Int. Cl. B21f *1/02*; B65b *13/02*

U.S. Cl. 53—198 **9 Claims**



A component sequencing and taping machine including a rotatable taping head having a notched cylindrical portion to

which adhesive tapes and components are supplied, and a non-resilient roller for applying pressure to the tapes and the component leads to press them into said notches. The machine also includes improved means for dispensing components in sequence and supplying them to the taping head, means for insuring proper orientation of components as they are removed from dispenser, and improved means for straightening leads of the components before supplying them to the taping head.

3,701,234

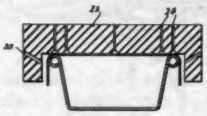
APPARATUS FOR MAKING A CLOSURE ON A CONTAINER

Martin M. Sternau, Flushing, N.Y., assignor to W. R. Grace & Co., Duncan, S.C.

Continuation of Ser. No. 665,419, Sept. 5, 1967, abandoned, which is a continuation of Ser. No. 591,628, June 15, 1956. This application March 12, 1971, Ser. No. 123,856

Int. Cl. B65b 7/28

U.S. Cl. 53—329 **2 Claims**



An apparatus for forming covers of heat shrinkable material on dish-shaped containers comprising means for maintaining a film cover on a container, means for gathering the edge of the film extending beyond the edge of the container into a skirt and heat sealing means adjacent to the support to heat shrink the gathered edge of the film.

3,701,235

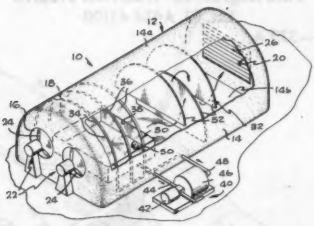
METHOD OF AND APPARATUS FOR TREATING A GAS TO REMOVE FOREIGN CONSTITUENTS THEREFROM

Boris Isaacson, 14532 Vanowen, Van Nuys, Calif.

Filed Oct. 26, 1970, Ser. No. 83,735

Int. Cl. B01d 47/06

U.S. Cl. 55—84 **6 Claims**



A method of and apparatus for treating a gas to remove foreign constituents from the gas by inducing flow of the gas through and inflatable treatment chamber constructed of a thin plastic film in a manner such as to effect inflation of the chamber by gas pressure, and washing, drying, and or otherwise treating the gas during its flow through the chamber to remove the foreign constituents for the gas. Primary applications of the invention involve the treatment of atmospheric air to remove therefrom dust, smog, fog, and or other foreign constituents. In these primary applications, the inflatable treatment chamber may be installed on level ground, on building tops, in natural or artificial ravines, such as washes or storm drains, or in natural or artificial tunnels, such as sewer tunnels having openings to the atmosphere.

3,701,236

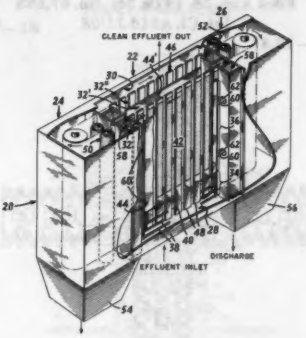
MODULARIZED ELECTROSTATIC PRECIPITATOR

Bernard A. Rotsky, Oakland, and Gilbert M. Dunne, Jr., Sparta, both of N.J., assignors to Gourdine Systems, Inc., Livingston, N.J.

Filed Dec. 1, 1970, Ser. No. 94,033

Int. Cl. B03c 3/10

U.S. Cl. 55—114 **32 Claims**



A self-contained electrostatic precipitator module adapted to be inserted into and removed from a housing as a unitary assembly includes a slatted, endless belt defining a composite attractor electrode-collector electrode subassembly, a forced air system for cooling and cleaning electrode holder structures, a power supply for establishing the charging and precipitating fields, a drive motor and train and mounting system for moving the endless belt, and rotary brushes at a remote location for neutralizing and cleaning the belt. The belt slats are flat, rigid members of simplified design and are individually mounted to allow selective replacement of a local belt section. Insulating gaps of optimized configurations are provided around high-potential electrode holders to prevent electrical shorting or sparking. Increased capacity is readily obtainable by employing plural units arranged in parallel within a common housing.

3,701,237

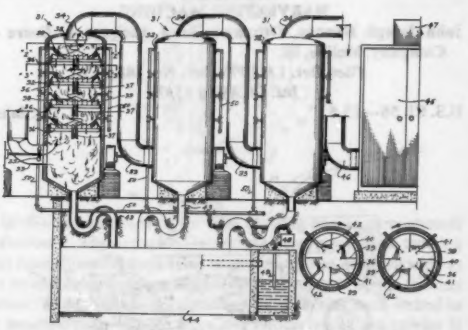
SMOKE ELIMINATOR

Harry A. Smuck, 6050 Ritchie Highway, Anne Arundel County, Md.

Continuation of Ser. No. 12,763, Feb. 19, 1970, abandoned. This application March 10, 1972, Ser. No. 233,808

Int. Cl. B01d 45/10

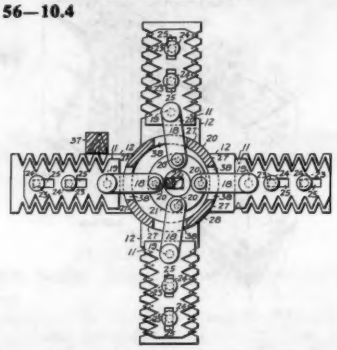
U.S. Cl. 55—230 **1 Claim**



A gas scrubber and purifier for the exhaust gases from incinerators, furnaces and the like, the exhaust gases being forcibly passed through water curtains and sprays produced by revolving discs which throw water by centrifugal force

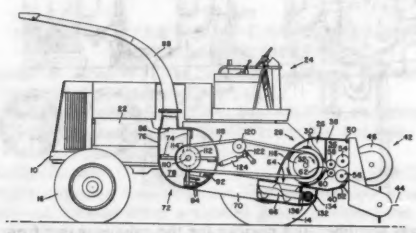
through which the exhaust gases are forced to pass to capture any fine solid matter such as dust, fly ash and the like and to dissolve any soluble gaseous ingredient in the exhaust gases.

3,701,238
FENCE MOWER
George Hintze, Jr., 2411 Avenue "G", Nederland, Tex.
Filed Aug. 28, 1970, Ser. No. 67,688
Int. Cl. A01d 35/08
U.S. Cl. 56—10.4 7 Claims



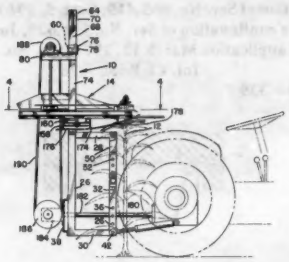
The invention has to do with utilizing a fence mower for mowing vegetation such as grass, weeds and the like in hard to reach places such as under and beyond fences supported by fence posts which vegetation is inaccessible to the conventional type mowers heretofore disclosed. The mower is operated by means of a lifting supporting arm attached to a wheeled tractor which supports and guides the mower durings operative and non-operative positions. The lower edge of the bottom portion of a sleeve and the upper spring held sleeve of a lower companion sleeve holds opposed cam faces on said sleeves in meshed position yieldingly, but upon the cutting element protruding through and under the fence coming into contact with a vertical fence post supporting the fence. The forward movement of the tractor will cause the blade cutting element under the fence contacting the post to turn backward 90° and thus allow the meshed cam faces of the lower companion spring held sleeve which is attached to the lower collar or housing which carries the blades to turn 90° and the matching cam face edges of the upper and lower sleeves to again releasably mesh and held only by tension of the spring will allow the cutting blade next under the fence to mow the vegetation under the fence forward thereof to the next succeeding fence post.

3,701,239
HARVESTING MACHINE
John Joseph Hennen, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Oct. 12, 1971, Ser. No. 188,217
Int. Cl. A01d 45/02
U.S. Cl. 56—13.5 16 Claims



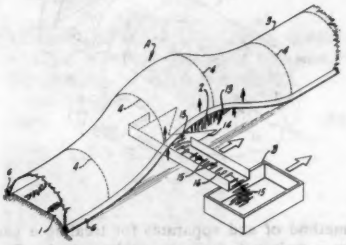
A drive arrangement for a self-propelled forage harvester having a forwardly mounted transverse cutterhead, a side mounted blower fan rotatable about a transverse axis, and a rear mounted engine, the drive including a transverse shaft driven by the engine and extending axially through and driving the blower fan. The outer end of the shaft is drivingly connected with the cutterhead shaft by means of a longitudinally extending endless flexible drive element.

3,701,240
TOBACCO TOPPING APPARATUS
David F. Wise; R. B. Tyndall, and Donald E. Jones, all of Clinton, N.C., assignors to Vann Industries, Inc., Clinton, N.C.
Filed Jan. 12, 1970, Ser. No. 2,110
Int. Cl. A01d 45/02
U.S. Cl. 56—63 7 Claims



An attachment adapted to be mounted on a tractor or other mobile support for traversing rows of tobacco plants to remove the bloom or top portions from the stalks. A cutting and conveying unit generally aligned with a plant row utilizes guide arms for directing each stalk to a rotary saw for removing the top portion of each plant, and conveyors for gripping and positively displacing the cut top portions rearwardly and to one side of the plant row to insure that the tops do not fall into the plant row just topped.

3,701,241
METHOD OF PRODUCING AND HARVESTING WHITE ASPARAGUS SPEARS
John S. Zuckerman, 1515 West Weber Avenue, Stockton, Calif.
Filed Aug. 30, 1971, Ser. No. 175,875
Int. Cl. A01d 45/00
U.S. Cl. 56—327 A 9 Claims

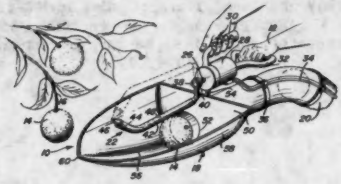


A method of producing and harvesting white asparagus spears along a ridged crop row wherein the asparagus plants are growing, and from which row the asparagus spears emerge and thereabove grow to harvest maturity; the method including essentially the step of shielding the crop row against access of sunlight to said emerging and growing spears whereby, in darkness, they remain white.

It is anticipated that the crop row will be shielded, for the above purpose, by a longitudinally extending shroud of opaque material, with the shroud formed so that it may be progressively elevated above the crop row to permit of ready

and convenient access to and harvesting of the white spears in the zone in which the shroud is so elevated; such progressive elevation of the shroud, and harvesting of the white spears, being preferably accomplished by a machine designed for such purposes.

3,701,242
MANUAL FRUIT HARVESTER
Curtis J. Townsend, P.O. Box 374, Port Orange, Fla.
Filed June 9, 1970, Ser. No. 44,819
Int. Cl. A01g *19/00*
U.S. Cl. 56—328 R **8 Claims**

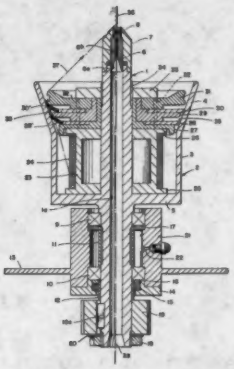


A manually manipulated device for removing fruit, particularly oranges or other citrus fruit, from the trees on which they grow by separating the fruit from the stems and collecting the dislodged fruit. The device includes a small portable motor having an offset longitudinally extending fruit engaging member which is rotated in a circular path in order to engage the fruit in a downward direction adjacent its connection with the stem for separating the fruit from the stem with the device also including an attached collection pan communicated through a hose with the source of vacuum or provided with a ground supported collection tray which underlies substantially one-half of a tree which also may be communicated with a source of vacuum from its lowest point.

3,701,243
ADJUSTABLE RAKE
Gale H. Durkee, 4301 Stafford S.W., Wyoming, Mich.
Filed July 26, 1971, Ser. No. 165,483
Int. Cl. A01d *7/00*
U.S. Cl. 56—400.18 **11 Claims**

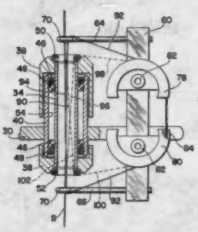
A hand rake having a plurality of tines whose spread is adjustable in width for different operations. The tines extend through a guide at the bottom of the rake handle and are secured at their upper end to a retainer which slides along the handle. A special retainer structure clamps the upper end of the tines tightly so that the rotational position of the retainer is maintained by the tines in a fixed position with respect to the guide position. A split collar and locking nut arrangement facilitate the locking of the retainer with one hand in various adjusted positions along the handle. The handle can be made in two parts for separation when not in use. A hook extends from the guide for hanging the rake when not in use.

3,701,244
APPARATUS FOR APPLYING A WIRE COIL TO A FINE WIRE STRAND
Peter Dismon, Porselen, and Heinz Jansen, Kirchhoven, both of Germany, assignors to Glanzstoff AG, Wuppertal, Germany
Filed July 13, 1971, Ser. No. 162,060
Claims priority, application Germany, July 21, 1970, P 20 36 040.1
Int. Cl. B65h *81/08*
U.S. Cl. 57—18 **16 Claims**



Apparatus for applying a wire coil to a fine wire strand, in which the fine strand to be wound is drawn through the axis of a rotatable hollow shaft which is arranged coaxially with the supply reel for the coiling wire, this supply reel being mounted within an open ended pot receptacle joined to the shaft and rotating therewith, wire guiding and braking means preferably in the form of radially extending disks or rings being inserted in the path of the coiling wire as it is drawn from the supply reel over the guide and brake means to a winding point adjacent the front or exit end of the hollow shaft.

3,701,245
FRICTION TWISTING UNIT
Hans H. Richter, Warwick, R.I., assignor to Lessona Corporation, Warwick, R.I.
Filed Sept. 10, 1970, Ser. No. 71,027
Int. Cl. D02g *1/00*; D01h *7/92*, *13/04*
U.S. Cl. 57—34 R **10 Claims**



Method and apparatus for false twisting one or more strands is disclosed. The apparatus includes an improved false twisting unit operable to impart false twist into one or more strands as the strand or strands are advanced and engaged by the friction twister. Guide means are provided for directing each strand in an inactive path remote from the twister while the twister is being threaded up, during the interval when the twister is being brought up to speed, and while advance of the strand from its supply to its take-up is commenced. Subsequent to these steps each strand is shifted into an active position where it engages with the friction twister to be twisted thereby.

3,701,246
RING THREADING TOOL

John Michael Greenway, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England

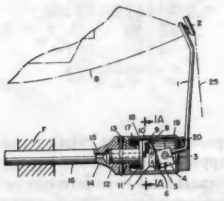
Filed Jan. 29, 1971, Ser. No. 110,846
Claims priority, application Great Britain, Feb. 5, 1970, 5,592/70
Int. Cl. D01h *17/00*
U.S. Cl. 57—34 R 7 Claims

A tool for use in threading an advancing strand through a hole comprising a body member, severing means carried by the body member, a yieldable guide carried by the body member, said guide being biased toward a first position in which it blocks engagement of a strand with the severing means and being movable toward a second position in which it permits engagement of the strand with the severing means, whereby a strand may be engaged with the guide so that tension in the strand tends to urge the guide toward its second position and when the tension in the strand is sufficiently high to overcome the biasing force of the guide, the latter moves to permit the strand to engage and be severed by the severing means.

3,701,247
AUTOMATIC SWITCH-OFF ASSEMBLY FOR FEED SPOOLS IN TEXTILE MACHINES

Karl-Heinz Rehn, and Klaus Detlef Otten, both of Remscheid, Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed May 13, 1971, Ser. No. 142,903
Claims priority, application Germany, May 16, 1970, P 20 24 122.9
Int. Cl. D01h *13/16*
U.S. Cl. 57—81 14 Claims

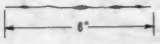


An automatic switch-off assembly in the operation of individual feed spools on textile machines essentially including a balloon thread guide connected to a holder on the machine frame in such a manner that the thread guide as a monitor or sensing element is urged to tilt against the normal tension exerted by the thread running thereagainst and as a guide element is also rotatable on said holder laterally away from the normal balloon thread path, both the tilting and rotating movements actuating a switch to its shut off position for at least the associated operating unit of the textile machine.

3,701,248
INTERLACED MULTIFILAMENT YARN

Walter Clarke Gray, Greenville, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 115,770, Feb. 16, 1971, which is a division of Ser. No. 883,536, Dec. 9, 1969, Pat. No. 3,563,021, which is a continuation-in-part of Ser. No. 801,596, Feb. 24, 1969, abandoned. This application April 28, 1971, Ser. No. 138,181. The portion of the term of this patent subsequent to Feb. 16, 1988, has been disclaimed.
Int. Cl. D02g *3/22*
U.S. Cl. 57—153 9 Claims

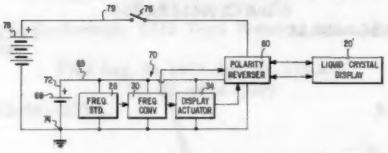


Interlaced multifilament yarn for weaving as warp in automatic power looms without size or twist is compact and uniform with unusually high bundle cohesion. Interlacing processes and finishes for retaining interlace are illustrated. Suitable intensity and permanence of interlace for weaving are defined by simple measurements.

3,701,249
SOLID STATE TIMEPIECE WITH LIQUID CRYSTAL DISPLAY

John M. Bergey, Lancaster; Eric L. Blouch, Richland, and Richard S. Walton, Lancaster, all of Pa., assignors to Hamilton Watch Company, Lancaster, Pa.

Filed March 12, 1971, Ser. No. 123,672
Int. Cl. G04b *19/30*
U.S. Cl. 58—50 R 19 Claims



Disclosed is a solid state wristwatch having an improved liquid crystal time display. Solid state time-keeping components are continuously energized from a low voltage battery while the display is energized only on demand from a separate high voltage battery. The direction of current flow through the liquid crystals is reversed during display to improve display life. A highly polished mirror surface is provided on the outside of the back plate of the thin glass sandwich where it is not in contact with the liquid crystal material.

3,701,250
ADJUSTABLE RETURN MECHANISM FOR A WATCH

Tsuneyoshi Ono, Chino, Japan, assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 22, 1971, Ser. No. 210,958
Claims priority, application Japan, Dec. 28, 1970, 45/132725
Int. Cl. G04f *7/04*
U.S. Cl. 58—76 5 Claims

A return mechanism for a watch having two hands comprises a pivoted lever acting on two heart cams, one for one

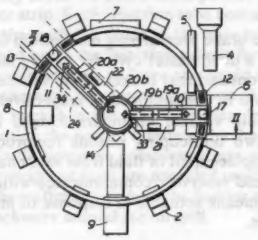
watch hand and the other for another watch hand. The return lever is pivoted on a support by an eccentric pivot pin which is

frictionally mounted on the support so that it can be rotated to change the pivot axis of the return lever relative to the two cams and thereby return both hands precisely to zero position.

3,701,251
CHAIN MAKING APPARATUS

Per Arvid Andreasson, and Mats Olof Persson, both of Laxa, Sweden, assignors to Elektriska Svetsningsaktiebolaget, Gothenburg, Sweden

Filed Feb. 16, 1971, Ser. No. 115,326
Claims priority, application Sweden, June 18, 1970, 8477/70
Int. Cl. B21l 5/02
U.S. Cl. 59—16 **8 Claims**

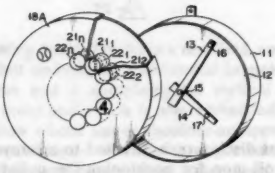


A chain making plant in which at least one arm is supported by a central supporting structure for rotation about a vertical axis so as to successively present a depending portion of a chain supported by the arm to a number of operating stations distributed around said control structure, said operating stations serving successively to add a link to the chain and to perform the operations required to finish said link. A conveyor provided on the arm serves to discharge the chain step by step into a vertical passage near said vertical axis, and additional means are provided to guide and advance the chain along a path extending from the lower extremity of said passage to a discharge point located further away from the central supporting structure than said operating station.

3,701,252
COMPLEMENTARY TIME INDICATING MECHANISM FOR A CLOCK

Takeshi Okamoto, 2-3-9, Shibuya, Shibuya-ku, Tokyo, Japan

Filed July 20, 1971, Ser. No. 164,361
Int. Cl. G04b 19/00
U.S. Cl. 58—126 R **1 Claim**



A complementary time indicating mechanism for a clock comprising a clock body including mechanisms for indicating the predetermined divisions of time, long and short hands having each inner end rotatably pivoted to said clock body and actuated by said time division mechanisms, a piece of permanent magnet fitted to the outer end of at least one of said hands, a panel of a transparent or semitransparent material covering the surface of said clock body containing said hands and a piece of magnetic material movably placed on said panel facing of said permanent magnetic piece.

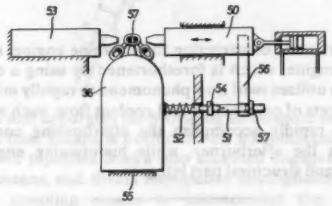
ERRATUM

For Class 59—16 see:
Patent No. 3,701,251

3,701,253
DEVICE FOR MOVING CHAIN LINKS IN A RESISTANCE WELDING MACHINE

Toni Wust, Cologne-Bickendorf, Germany, assignor to Meyer, Roth & Pastor, Cologne-Raderberg, Germany

Filed Oct. 7, 1969, Ser. No. 864,407
Claims priority, application Germany, Oct. 9, 1968, P 18 01 955.1
Int. Cl. B21l 3/02
U.S. Cl. 59—31 **8 Claims**

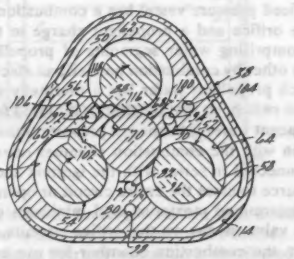


A device is used for moving bent C-shaped links joined into a continuous chain to be welded in a resistance welding machine. The device has an inlet guide and an outlet guide, consisting, for example, of guiding rails. The device also has a saddle moving a link between tensioning tools and supporting it during the welding, as well as a transporting tool for the chain. The device is particularly characterized by the arrangement whereby the saddle is movable relatively to the guides substantially perpendicularly to the direction of movement of the chain link.

3,701,254
ROTARY PISTON ENGINE

Oskar Michejda, Fort Wayne, Ind., assignor to Jadwiga Koltermann, London, England, a part interest

Filed June 12, 1970, Ser. No. 45,840
Int. Cl. F02g 3/00
U.S. Cl. 60—39.61 **11 Claims**



A rotary piston engine in combination with a compressor and a burner for providing combustion by-product gases at

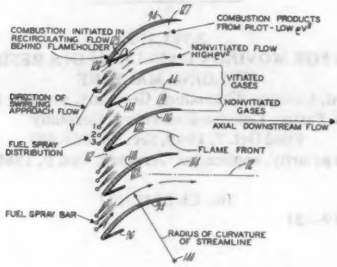
high pressure to operate the rotary piston engine. The rotary piston engine is provided with a rotary valve for timing the introduction of the high pressure gas to the engine piston chambers.

3,701,255

SHORTENED AFTERBURNER CONSTRUCTION FOR TURBINE ENGINE

Stanley J. Markowski, East Hartford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 26, 1970, Ser. No. 84,087
Int. Cl. F02k 3/10
U.S. Cl. 60—39.72 R **46 Claims**



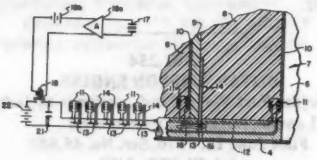
An afterburner construction for a turbine engine, such as a turbofan engine, which is foreshortened by using a construction which utilizes swirl flow phenomena to rapidly mix the engine products of combustion and coolant flow, such as fan air, and/or to rapidly accomplish the afterburning combustion process in the afterburner, while maintaining engine performance and structural part integrity.

3,701,256

DEMAND, SOLID-PROPELLANT GAS GENERATOR

Joseph E. Pelham, and Albert Ray Osburn, both of Brigham City, Utah, assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed Sept. 13, 1971, Ser. No. 179,687
Int. Cl. F02k 9/04
U.S. Cl. 60—39.47 **5 Claims**



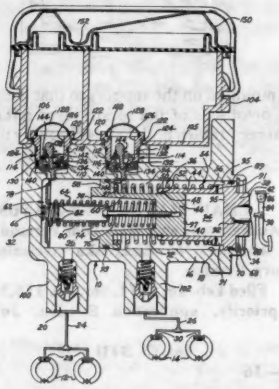
An orificed pressure vessel has a combustion chamber adjacent the orifice and a propellant charge in the remainder thereof comprising wafer segments of propellant separated from each other by combustion barriers; an electric igniter adjacent each propellant wafer has a thermally operated, normally open switch, so that the circuit is closed for each igniter as the adjacent wafer is burned; a pressure transducer in communication with the combustion chamber operates a master switch connected in series with the igniters and an electrical energy source to close the entire circuit or open it in response to a predetermined maximum and minimum chamber pressure; and valve means on the orifice permits withdrawal of gases from the combustion chamber for use as desired. Optional equipment includes a pressure relief valve in the combustion chamber and a capacitor connected in parallel between the energy source and the igniters.

3,701,257

HYDRAULIC MASTER CYLINDER

Robert F. Gaiser, St. Eph, Mich., assignor to The Bendix Corporation

Filed April 12, 1971, Ser. No. 133,047
Int. Cl. F15b 7/00
U.S. Cl. 60—54.6 E **5 Claims**



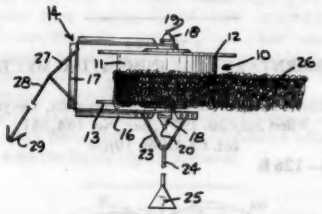
A hydraulic brake pressurizing mechanism for a motor vehicle including a dual master cylinder having independent connections to front and rear brakes of the vehicle. The front and rear brakes are in communication respectively with first and second variable volume chambers formed in the cylinder housing by two telescoping pistons reciprocally positioned therein for displacement of fluid from said chambers upon actuation. A fluid reservoir communicates with said chambers via tilt valve means actuable in response to movement of one of said pistons.

3,701,258

BUOYANT PULLEY LOCATING AND ANCHORING DEVICE FOR AN OIL MOP

Herbert M. Rhodes, New Orleans, La., assignor to Oil Mop Inc., Metairie, La.

Filed Feb. 16, 1971, Ser. No. 115,328
Int. Cl. E02b 15/04
U.S. Cl. 61—1 F **3 Claims**



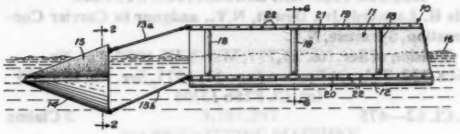
The present disclosure is directed to a buoyant pulley for use with an oil mop for positioning the pulley and locating same to maintain the pulley in substantially the desired height in the water and at substantially a horizontal attitude against the pull of the endless oil mop passing about the pulley.

3,701,259

OIL POLLUTION BARRIER

Olaf Heartness, 41 Van Reypen St., Jersey City, N.J.

Filed Aug. 13, 1971, Ser. No. 171,693
Int. Cl. E02b 15/04
U.S. Cl. 61—1 F 9 Claims



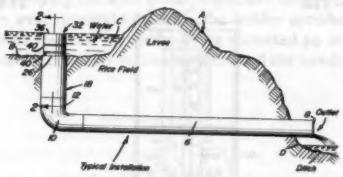
The method of laying and the construction of an oil pollution barrier for use on the ocean or other bodies of water. The method comprises the simultaneous and synchronized unreeling from a vessel of a resilient barrier strip formed with spaced inflatable pockets and a sectioned resilient hose containing a liquid chemical. Each inflatable pocket has an opening formed at the base which is in communication with an injection tube which is removably mounted below each pocket in the lower edge of the barrier strip. Each injection tube contains a chemical powder, reactive with the liquid in the hose to form a gas. At a predetermined point the injection tube is forced into the hose, the hose is compressed to force the liquid upward into contact with the chemical powder, the gas formed by the reaction inflating the pocket in the plastic barrier. In alternative forms of the invention the pocket is inflated by the use of a low boiling point volatile liquid or compressed gas stored in the hose. The barrier strip and hose are unreeled until the oil slick is surrounded, whereafter the ends of the barrier and hose are cut to form an enclosure around the oil spill.

3,701,260

WATER LEVEL CONTROL DEVICE

Hosea J. Soileau, 614 N. Coreil, Ville Platte, La.

Filed May 12, 1970, Ser. No. 36,579
Int. Cl. E02b 13/00
U.S. Cl. 61—12 6 Claims



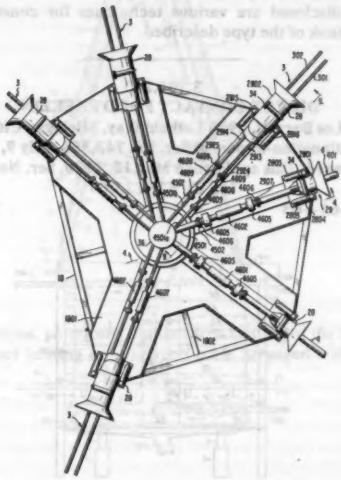
A water levelling device for use in a rice field, comprising an L-shaped conduit embodying a horizontal branch embedded beneath a levee and a complemental vertical upstanding branch at the inner end which is also embedded. The inner end has an elbow whose upper shoulder-equipped end supports a cylindrical adapter which, in turn, provides a coupling for an extensible and contractible water level controlling sleeve. This sleeve is insertable and removable and has an adjustively applicable rubber joint sealing ring seated atop a limit stop shoulder at the upper end of the adapter.

3,701,261

APPARATUS FOR PROVIDING OFFSHORE INSTALLATION

Clyde E. Nolan, Jr., Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.

Filed Feb. 8, 1971, Ser. No. 113,252
Int. Cl. F16l 35/00; E21b 43/01
U.S. Cl. 61—72.3 24 Claims



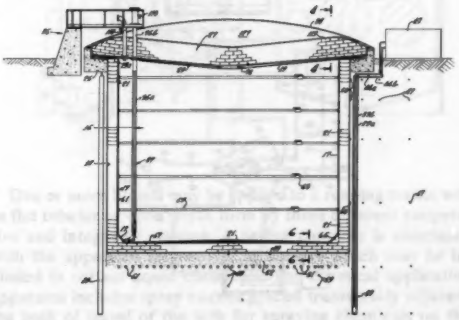
Method and apparatus for providing an offshore installation wherein a base means is positioned on a submerged surface, one or more pipelines drawn into socketed engagement with the base means, and divers manipulate misalignment accommodating coupling means to interconnect the socketed pipeline means with a submerged, fluid receiving or supplying riser means housed in a caisson means.

3,701,262

MEANS FOR THE UNDERGROUND STORAGE OF LIQUIFIED GAS

Joseph A. Connell, Harbor City, and Anthony J. Baranyi, Costa Mesa, both of Calif., assignors to Systems Capital Corporation, Phoenix, Ariz.

Filed Oct. 12, 1970, Ser. No. 79,980
Int. Cl. F17c 7/02
U.S. Cl. 62—45 16 Claims



Liquified gas is stored underground in a large double walled container seated in an opening in the earth's surface. Between the walls of the liner, thermal insulation is distributed in a continuous layer along the floor and wall of the opening. A diaphragm is supported across the top of the opening with a seal being provided between the diaphragm and the double

walled liner to form a container for the liquified gas. Surrounding the lip of the opening is a concrete ring across which a net of cables is stretched to support a thermally insulating ceiling. A cooling system is provided for freezing the earth to aid in the excavation of the opening and this system is subsequently used to maintain the wall and floor of the opening frozen to a controlled thickness by cooling them in response to a rise in the temperature of the surrounding earth above a predetermined temperature level.

Also disclosed are various techniques for constructing a storage tank of the type described.

3,701,263

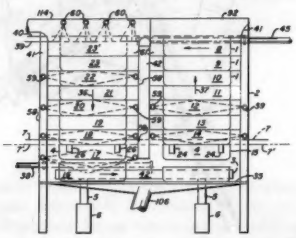
DIRECT CONTACT FOOD FREEZING

Arthur Lee Barrett, 2928 Lothair Way, Michigan City, Ind.

Continuation-in-part of Ser. No. 743,356, July 9, 1968, abandoned. This application May 18, 1970, Ser. No. 38,558

Int. Cl. F26d *25/04*

U.S. Cl. 62—63 **24 Claims**



A direct contact food freezing method and apparatus which incorporate food carrying trays circulating through freezer chamber while food carried thereby is being sprayed with liquid refrigerant for freezing the food.

3,701,264

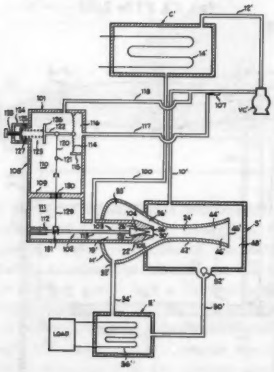
CONTROLS FOR MULTIPLE-PHASE EJECTOR REFRIGERATION SYSTEMS

Alwin B. Newton, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 8, 1971, Ser. No. 113,226

Int. Cl. F25b *1/06*

U.S. Cl. 62—191 **14 Claims**



A multiple-phase ejector refrigeration system including capacity controls allowing part-load operation. The capacity is varied by controlling the flow of liquid refrigerant from a condenser into the nozzle of the multiple-phase ejector. This has the effect of increasing the suction pressure at a compressor, connected to an evaporator, above the pressure at the outlet of the cooling coil, thus reducing the compression ratio at which the compressor must operate, and regardless of the actual percentage of load at which the system may be operating at a given time and despite any changes in the speed of the compressor in response to compression ratio differences.

3,701,265

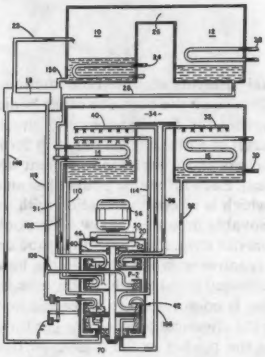
ABSORPTION REFRIGERATION SYSTEM

Louis H. Leonard, Jr., Dewitt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 20,777, March 18, 1970, Pat. No. 3,608,332. This application June 21, 1971, Ser. No. 155,080

Int. Cl. F25b *15/06*

U.S. Cl. 62—475 **3 Claims**



An absorption refrigeration system wherein there is provided in communication with the evaporator, absorber, generator and condenser fluid handling apparatus in the form of a hermetic housing mounting therein a rotatively driven shaft member journaled at opposite ends in bearing means and supporting a plurality of scoop pumps for effecting, among other functions, circulation of refrigerant and absorbent solution through the system, purging, and machine capacity control.

3,701,266

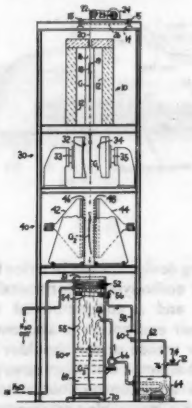
METHOD OF TEMPERING GLASS IN A LIQUID

Raymond S. Chisholm, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 44,151, June 8, 1970, abandoned. This application Jan. 10, 1972, Ser. No. 216,808

Int. Cl. C03b *27/00*

U.S. Cl. 65—116 **11 Claims**



Tempering a heated glass sheet or other glass articles by moving the sheet through a body of vapor and quenching in a

liquid or liquid-vapor tempering medium maintained in a container. A condenser surrounds the upper portion of the container to provide the vapor body or barrier that inhibits rapid evaporation of the tempering medium and permits ready entry and removal of the glass sheet relative to the tempering medium. Several compositions having dense vapors and a boiling point above about 110° C. are suggested for the tempering medium.

3,701,267

WARP KNITTING MACHINE

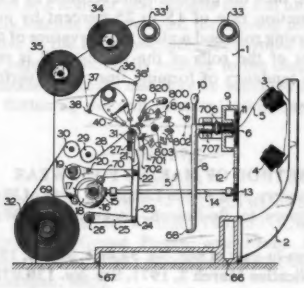
Stefan Furst, assignor to W. Schlafhorst & Co., Monchengladbach, Germany

Filed March 13, 1970, Ser. No. 19,431

Claims priority, application Germany, Nov. 13, 1969, P 19 12 645.5

Int. Cl. D04b *23/00, 27/00*

U.S. Cl. 66—86 **13 Claims**



Warp knitting machine having a zone wherein knitting needles are disposed and means for supplying warp threads to the needles, includes a device for filling a weft to the warp threads having a plurality of holder members located in the vicinity of respective weft reversal locations disposed at opposite lateral edges of a fabric web being knitted by the machine, thread guide means movable along a continuous travel path and cooperating with the holder members for making the weft ready by looping the weft about respective holder members at opposite weft reversal locations, the holder members at each of the weft reversal locations being mounted so as to be displaceable successively in direction toward the needle zone.

3,701,268

AIR HEATING BOX FOR TEXTILE MACHINES

Heinz Treptow, Ennepetal-Milspe; Benno Frank, Wuppertal-Elberfeld, and Heinz Schippers, Remscheid, all of Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

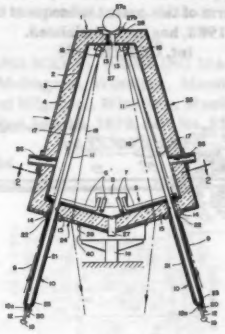
Filed July 13, 1971, Ser. No. 162,082

Claims priority, application Germany, July 13, 1970, P 20 34 610.5; Jan. 22, 1971, P 21 02 956.1

Int. Cl. D06c *1/00, 7/00*

U.S. Cl. 68—5 D **23 Claims**

An insulated air heating box for treating threads transported by textile machinery wherein one wall of the box is provided with entry and exit slots for each thread together with an adjustable thread loading and guiding means insertable through the same wall between or adjacent to the thread entry and exit slots. The box is also equipped with one or more differen



heating devices, permitting contact-free heating of the threads and/or direct heating on a contact plate arranged within the box.

3,701,269

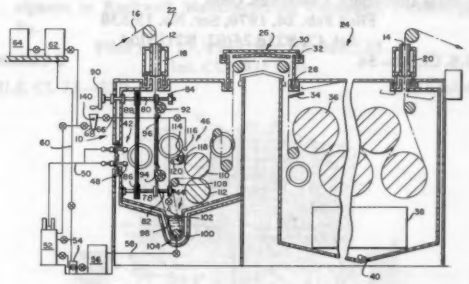
APPARATUS FOR APPLYING LIQUIDS TO A RUNNING WEB

Harold R. Wilcox, assignor to Riggs & Lombard, Inc., Lornell, Mass., Maynard, Mass.

Filed May 7, 1971, Ser. No. 141,304

Int. Cl. B05b *13/02*; B05c *9/14*

U.S. Cl. 68—19 **10 Claims**

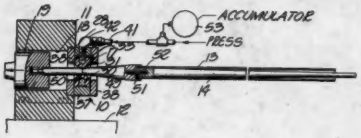


One or more liquids may be applied to a running textile web in flat tubular or open width form by three different cooperative and integrated systems. A drying chamber is associated with the apparatus for recovering solvent which may be included in certain liquid chemicals. The chemical applicating apparatus includes spray nozzles spaced transversely adjacent the path of travel of the web for spraying chemicals on the moving web. Guiding means are provided for selectively positioning the web with respect to the nozzles for optimum spraying position. A padding tank is also provided for passing the web directly through a bath of the chemical and a metering system including an applicator roll and an adjustable blade in different configurations is provided for applying precisely controlled amounts of chemicals to the web.

3,701,270
METHOD OF DRAWING METAL TUBES

Raymond A. Matthews, 2332 Via Anacapa, Palos Verdes Estates, Calif.

Division of Ser. No. 760,823, Sept. 19, 1968, Pat. No. 3,570,297. This application Dec. 3, 1970, Ser. No. 94,755. The portion of the term of this patent subsequent to March 16, 1988, has been disclaimed.
Int. Cl. B21c 3/06
U.S. Cl. 72—57, 9 Claims

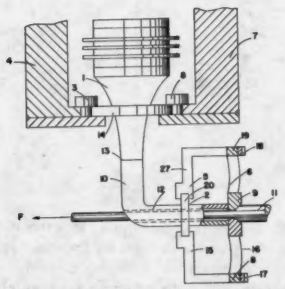


A method of drawing tubing using a conventional draw bench and a die assembly having a die ring in the form of a peripherally grooved nylon spool held in a case defining a pressure chamber around the spool. A tube to be drawn is telescoped onto a shaped mandrel and inserted in the die, and the chamber is filled with fluid under substantially constant pressure that is maintained by a relief valve or an accumulator, while the tube is drawn through the die, the pressure being sufficient to collapse the tubing initially around the mandrel and then to iron the tubing smoothly onto the mandrel during drawing.

3,701,271
WIRE DRAWING APPARATUS USING VIBRATORY-MECHANICAL ENERGY AND CURVED TRANSMISSION LINE

Lytton A. Kendall, Jr., Columbus, Ohio, assignor to The Ohio State University, Columbus, Ohio

Filed Feb. 24, 1970, Ser. No. 13,538
Int. Cl. B21d 26/02; B21j 5/04
U.S. Cl. 72—56, 3 Claims

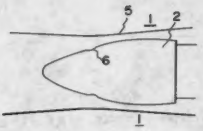


Apparatus for drawing wire utilizing a piezoelectric electromechanical transducer and an axially drilled curved transmission line in conjunction with a wire-drawing die to reduce the cross section of the wire. Static force exerted on the die by retaining diaphragms hold the die intermittent contact with the free end of the transmission line.

3,701,272
METHOD OF MANUFACTURING SEAMLESS STEEL PIPES

Hiroshi Nagai, and Haruo Kamimura, both of Kawasaki, Japan, assignor to Nippon Kokan Kabushiki Kaisha

Filed Oct. 20, 1970, Ser. No. 82,258
Int. Cl. B21b 19/04
U.S. Cl. 72—97, 1 Claim

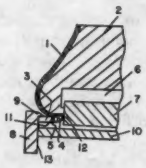


In a method of manufacturing a seamless steel pipe by piercing a blank by means of a piercing machine and then rolling the pierced blank into the product by means of a rolling mill, the blank is pierced at a reduction rate of 75 to 85 percent by using a piercing machine comprising rolls having flat gorges at the center thereof and a piercing plug provided with an annular recess on its outer periphery at portions corresponding to the gorges and then the pierced blank is rolled by a single pass and at a reduction rate of 15 to 25 percent by means of a rolling mill having rolls and a plug, the curvature of the relieve of the caliber of the rolls of the rolling mill is reduced to minimize the tendency of forming fins on the surface of the product.

3,701,273
METHOD OF MAKING FOOTWEAR

Horace R. Auberry, and Anton Liebscher, both of Waynesville, N.C., assignors to Ro-Search, Incorporated, Waynesville, N.C.

Continuation-in-part of Ser. No. 34,003, May 4, 1970. This application March 2, 1971, Ser. No. 120,078
Int. Cl. A43d 21/00
U.S. Cl. 12—145, 8 Claims



The invention refers to the manufacture of shoes with uppers lasted by pulling a string secured to the lasting margin of the upper. Improvements are presented which reduce costs of manufacture especially if the sole is molded directly to the upper. The method of manufacture includes use of a last deformed to obtain preselected location of the lasting margin and to prevent the formation of undesirable spew.

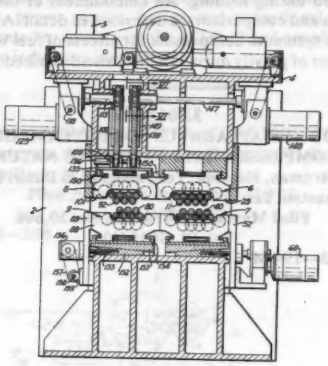
3,701,274
ROLLER LEVELER WITH ADJUSTABLE FLATTENING SECTION

Christian Roesch, Middle Village, N.Y., assignor to Sutton Engineering Company, Pittsburgh, Pa.

Filed Nov. 9, 1970, Ser. No. 87,842
Int. Cl. B21d 1/02
U.S. Cl. 72—165, 11 Claims

A vertically spaced pair of roll units, constituting a shape correction section, extend lengthwise between the bed and vertically adjustable beam of a roller leveler. One of these roll units is supported by the beam. There is a second vertically

spaced pair of roll units that form a flattening section beside the shape correction section. The side of one of the flattening roll units nearest the other section is pivotally connected to the beam on an axis extending lengthwise of it. There also are vertically adjustable means, located between the pivot and the opposite side of the pivoted roll unit, which connect the latter



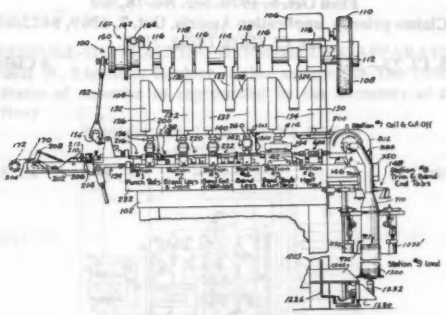
to the beam in a manner that permits the roll unit to be tilted transversely. Means are provided for moving the pivot vertically relative to the beam to enable the pivoted flattening roll unit to be adjusted vertically relative to the shape correction roll unit beside it. Means also may be provided for deflecting the other flattening roll unit relative to the shape correction section.

3,701,275

MACHINE FOR FORMING PISTON RING SPACER-EXPANDERS FROM STRIP STOCK

Roy E. Overway, Grand Haven, and Frank G. Warrick, Muskegon, both of Mich., assignors to Seal Power Corporation, Muskegon, Mich.

Filed May 21, 1970, Ser. No. 39,499
Int. Cl. B21d *28/00*; B23p *15/06*
U.S. Cl. 72—335 **25 Claims**



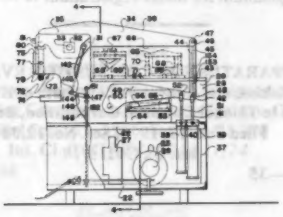
A machine for making spacer-expanders for piston oil rings of the type described in United States Pat. No. 3,477,732. The machine comprises a punch press having a plurality of stations through which strip stock is fed progressively in accurately predetermined increments, the strip stock being worked between dies at each station to transform the strip stock into completed rings. The press includes one or more punching stations where the strip stock is pierced and blanked, one or more forming stations where the pierced and notched strip is bent to form the spring legs of the spacer-expander and then curled into a channel-shaped cross-section, a coiling station where the channel-shaped stock is fashioned into a coil, and a cut-off station where each coil is sheared from the strip to form the semi-finished ring. The press also includes a special transfer apparatus for transferring the semi-finished ring to a final work station wherein the end joints are trimmed and formed to final configuration, after which the finished rings are loaded automatically in stacked relation on a cylindrical mandril.

3,701,276

IRON AND METAL WORKING MACHINERY

John Stanley Malmgren, Winnipeg, Manitoba, Canada, assignor to Excel Mfg. Ltd., Winnipeg; Manitoba, Canada

Filed July 15, 1970, Ser. No. 55,053
Int. Cl. B21j *9/12*
U.S. Cl. 72—404 **28 Claims**



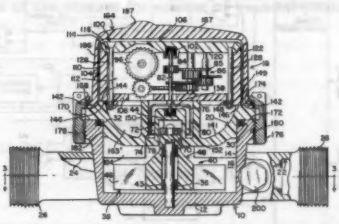
A main beam is pivoted between the ends and operates punch on the downward stroke of the shorter end and a plurality of detachable metal working tools on the down stroke of the longer end. A secondary beam operates a shear also on the down stroke of the longer end. Two piston and cylinder assemblies are connected to the beam and valving permits the larger of the cylinders to be used for most operations with the smaller cylinder returning the beam to the starting position rapidly. If more force is required both cylinders can be used together for the power stroke.

3,701,277

FLUID FLOW METER

Richard A. McMahon, Pittsburgh; Winston F. Z. Lee, Delmont, and Elmer F. Painley, Uniontown, all of Pa., assignors to Rockwell Manufacturing Company, Pittsburgh, Pa.

Filed May 27, 1969, Ser. No. 828,135
Int. Cl. G01f *1/06*
U.S. Cl. 73—229 **15 Claims**



A fluid flow meter having a recessed body defining a fluid measuring chamber which is open at one end and which rotatably receives a fluid driven metering rotor. A register casing containing a fluid flow register mechanism is detachably fixed to the meter body and has a bottom wall part covering the open end of the chamber. Drive magnets and follower elements respectively disposed within the chamber and the casing on opposite sides of the casing bottom wall part transmit rotation of the rotor to actuate the register mechanism. The bottom wall part is interiorly concavely contoured so that its peripheral end portion extends essentially axially and terminates in an axially directed annular edge surface on which a

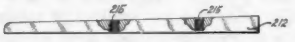
structure, which mounts the register mechanism, is supportingly seated. The bottom wall part is further integrally formed with a flange extending radially from its axially extending end portion so that the wall part may be secured in place by clamping the flange between the meter body and a separately formed cover part of the casing. Concentric embossments formed integral with the bottom wall part define concentric wells opening in axially opposite directions respectively into the chamber and into the interior of the casing and respectively receiving the drive magnets and driven elements. The rotor is molded as one piece with an internal protrusion that forms a thrust bearing surface for a rotor support shaft extending into the rotor hub. A meter calibrating member selectively and transversely displaceably into an accurately diametered orifice at the inlet port for the measuring chamber provides an adjustment for meter registration.

3,701,278

TEST APPARATUS FOR COMBUSTION EVALUATION

Robert E. Askins, and George P. Roys, both of Huntsville, Ala., assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed Feb. 17, 1970, Ser. No. 12,081
Int. Cl. G01l *5/14*
U.S. Cl. 73—35 **10 Claims**



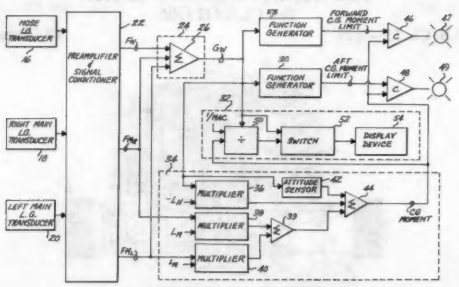
A combustion chamber for testing under actual burning conditions the ability of air augmented solid propellants to meet operational requirements under subsonic or supersonic environments.

3,701,279

AIRCRAFT WEIGHT AND CENTER OF GRAVITY INDICATOR SYSTEM

Carl R. Harris, Kirkland; Robert B. Banks, Bellevue, and Dallas V. Soward, Seattle, all of Wash., assignors to Electro Development Corporation, Lynnwood, Wash.

Filed Feb. 8, 1971, Ser. No. 113,129
Int. Cl. G01m *1/12*
U.S. Cl. 73—65 **8 Claims**



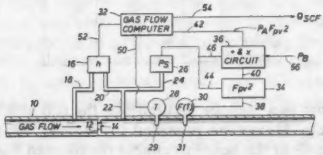
After a discussion of the prior art techniques and apparatus for insuring that an aircraft is loaded correctly, such as loading charts, manifest forms, tipping alarms, and the like, an improved weight and balance system for aircraft is described for providing automated monitoring of aircraft loading. The system includes a plurality of transducers generating signals proportional to the forces acting on the landing gear of the aircraft. These signals are summed to obtain a signal proportional to the instantaneous gross weight of the aircraft. In addition, an analog computer derives from these signals a signal which is proportional to the aircraft's instantaneous center of gravity moment. A display means provides for the continuous display of gross weight and center of gravity, in terms of percent MAC. In addition, the gross weight signal is applied to first and second function generators which develop therefrom signals corresponding to forward and aft center of gravity limits. Comparison is made in appropriate circuitry of the instantaneous center of gravity moment with the forward and aft CG limits, and an appropriate indication is made if either limit is exceeded during loading. An embodiment of the function generators and comparators is described in detail. A modification of the system to compensate for effects of fuel withdrawal upon center of gravity during flight is also described.

3,701,280

METHOD AND APPARATUS FOR DETERMINING THE SUPERCOMPRESSIBILITY FACTOR OF NATURAL GAS

Larry J. Stroman, Houston, Tex., assignor to Daniel Industries, Inc., Houston, Tex.

Filed March 18, 1970, Ser. No. 20,606
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 M **20 Claims**



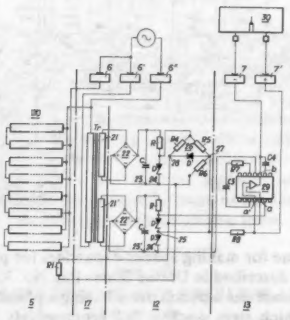
In one exemplar embodiment, an electrical circuit for deriving an electrical signal representative of the square of the supercompressibility factor of natural gas by providing means for measuring the static pressure of the gas, multiplying the static pressure measurement by predetermined functions of pressure, temperature and specific gravity for a preselected range of operation and adding a predetermined constant factor, approaching unity, to the product of the pressure and functions of pressure, temperature and specific gravity.

3,701,281

MEASURING INSTALLATION

Dominik Sogner, Timelkam, Austria, assignor to Chemiefaser Lenzing Aktiengesellschaft, Lenzing, Austria

Filed Oct. 6, 1970, Ser. No. 78,360
Claims priority, application Austria, Oct. 7, 1969, 9423/69
Int. Cl. G01k *13/08, 7/20*
U.S. Cl. 73—351 **4 Claims**



A circuit arrangement for measuring a characteristic of a moving member wherein an electric current, representative of the characteristic is generated on the moving member and the value thereof indicated on an instrument mounted on associated fixed structure. The circuit includes a sensing element forming an arm of a bridge network, the output of which provides an input to an operational amplifier. The sensing element, bridge and amplifier, along with a suitable power

supply, are mounted on the moving member. The indicating instrument receives the output of the operational amplifier through slip rings or the like and the circuit compensates for the resistance variations normally encountered in slip ring coupling. In a particular application, the circuit arrangement is adapted to measure the temperature of heated rolls in a rolling mill, the sensing element (in this case a resistance thermometer), power supply, bridge and operational amplifier being mounted to rotate with the roll shaft and coupled via slip rings to the indicating instrument.

3,701,282

COLD STORAGE TEMPERATURE MONITOR

John B. Peterson, Madison, Wis., assignor to W. R. Grace & Co., New York, N.Y.

Filed June 1, 1970, Ser. No. 42,127
Int. Cl. G01k 11/06
U.S. Cl. 73—358 **4 Claims**

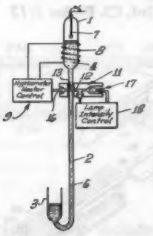
This invention comprises a reusable temperature recording telltale for cryogenic refrigerators, and in particular a telltale for use in a cryogenic refrigerator with racks for the storage of ampules, vials or other containers. The telltale device consists of an ampule, vial or other similar container which contains a liquid which has a melting-freezing point at a definite known temperature. This contained liquid within the ampule is frozen in a first orientation, and placed in the cryogenic refrigerator in a second orientation, but since frozen, it maintains its first orientation. However, if the cryogenic refrigerator achieves a temperature above the melting-freezing point of the contained liquid, it takes up the second orientation, recording the temperature excursion. Further, when a series of ampules containing liquids have varying melting-freezing points, the temperature excursion can be closely calculated, and when used in combination with a rack which maintains the orientation within the refrigerator, there is no possibility of an erroneous reading.

3,701,283

PRESSURE-SUBTRACTING HYPSOMETRIC APPARATUS

Ernest W. Lichfield, Boulder, Colo., assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 26, 1970, Ser. No. 84,029
Int. Cl. G01l 7/18
U.S. Cl. 73—401 **7 Claims**



A hypsometric liquid such as water is supported in a closed chamber on a tubular column of mercury, the mercury being exposed in a manometric manner to atmospheric pressure so that variations in the atmospheric pressure increase or reduce the height of the mercury column. Also, an increase in pressure applied to the hypsometric liquid reduces the height of the mercury column since the liquid rests directly on the mercury. The hypsometric liquid is heated in a controlled manner to produce a vapor that exerts pressure on the liquid and the mercury column. As the temperature is increased by the heater, the mercury moves down the tube until it reaches a constant or fixed level at which sensor electronics adjust the power to the heater so that the top of the mercury column remains exactly at this fixed level. The pressure on the liquid is determined by measuring the temperature inside the hypsometric chamber. Atmospheric pressure is essentially equal to the hypsometric chamber pressure plus the pressure equivalent of the mercury column.

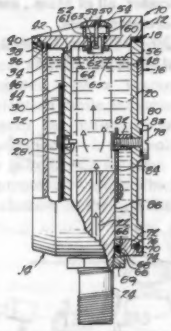
The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

3,701,284

PRESSURE GAUGE

Roy W. De Meyer, Mount Prospect, Ill., assignor to Colorado Manufacturing Corporation, Colorado Springs, Colo.

Filed Sept. 21, 1970, Ser. No. 73,705
Int. Cl. G01l 7/04; G01d 11/24
U.S. Cl. 73—416 **8 Claims**



A sliding, radial compression seal is provided between the main gauge casing and a movable blow-out closure element, in a fluid-filled pressure gauge, with yieldable retention of the closure in its normal case closing position. The closure seal insures maintenance of an effective fluid-tight seal of the gauge housing under normal conditions while permitting ready movement of the closure for release of unusual internal pressures.

ERRATUM

For Class 74—695 see:
Patent No. 3,701,623

3,701,285

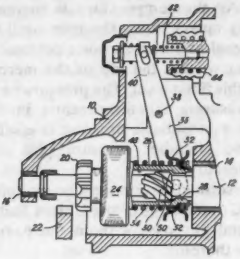
GEARING STARTER

Pierre Toulier, Le Monastere, France, assignor to Societe Anonyme DBA

Filed May 25, 1971, Ser. No. 146,641
Claims priority, application France, June 1, 1970, 7019970
Int. Cl. F02n 11/00
U.S. Cl. 74—6 **3 Claims**

Starter gearing of the positive shift type for an internal combustion engine in which the sleeve has short splines slightly shorter than the half of the length of the sleeve at the end of the latter opposite to the one connected to the free wheel. Ad-

jacent the free wheel an inner cavity is provided in the sleeve the walls of which do not contact the splines when the starter



drive assembly is in its released condition. With such an arrangement the engine vibrations cannot cause the advance of the pinion towards the flywheel.

3,701,286

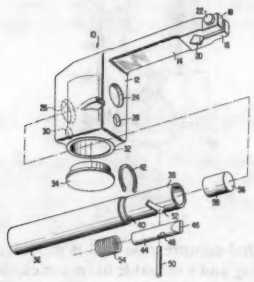
HANDLE FOR POSITIONING AN ELEMENT

James F. Donnelly, Worcester; Wendell P. Gee, Westboro, and Nelson S. Phipps, Leicester, all of Mass., assignors to Jamesbury Corporation, Worcester, Mass.

Filed Sept. 30, 1969, Ser. No. 862,306

Int. Cl. F16h *27/02*

U.S. Cl. 74—142 **7 Claims**



Disclosed is an improvement in a handle for operating an element such as a valve member, comprising a support member having a hollow portion, said support member including means to grasp a rotatable member, such as a valve control member so that movement of the support member causes rotation of the control member, said support member further including a first opening, handle means extending through said first opening into said hollow portion of said support member, said handle means including channel means therein, pawl means extending through said second opening into said hollow portion of said support member, said pawl means including pin means mounted thereto, said pin means being disposed in said channel means of said handle means whereby rotation of said handle means about its longitudinal axis causes said pin means to travel in said channel means causing the movement of said pawl means in a predetermined direction.

3,701,287

TOOTHED GEARING

Hendrik Kuiken, Luttelgeest, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

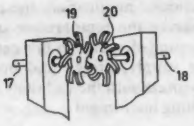
Filed Sept. 23, 1970, Ser. No. 74,571

Claims priority, application Netherlands, Oct. 2, 1969, 6914889

Int. Cl. F16h *55/06, 1/12*

U.S. Cl. 74—462 **5 Claims**

For transmitting small power between rotating shafts having skew or intersecting axes, gearwheels having teeth each of which defines convex and concave involute curved blanks



respectively for leading and trailing edges, the gearwheels being thin in the axial direction relative to the diameter.

3,701,288

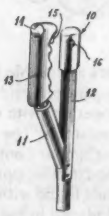
CONTROL APPARATUS HAVING A FINGER OPERATED DUAL MOTION CONTROL DEVICE

David B. Jordan, Wantagh, N.Y., assignor to Fairchild Hiller Corporation, Montgomery County, Md.

Filed Aug. 10, 1970, Ser. No. 62,494

Int. Cl. G05g *9/04*

U.S. Cl. 74—471 XY **7 Claims**



Control apparatus having a manual control device has two potentiometers located within a housing that are connected through two respective gear trains to an input lever that is adapted to be operated both up and down in substantially a vertical direction and forward and backward in substantially a horizontal direction by finger or thumb pressure. Movement of the input lever in one direction activates one potentiometer and movement of the input lever in another direction activates the other potentiometer. A mounting member is also provided that can be used to mount the control device on an aircraft control stick.

3,701,289

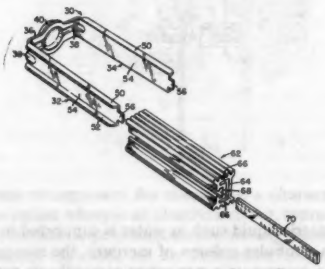
REFLECTIVE PEDAL

Carlton P. Pawsat, and Robert F. Humlong, both of Maysville, Ky., assignors to Wald Manufacturing Company, Incorporated, Maysville, Ky.

Filed July 20, 1970, Ser. No. 56,291

Int. Cl. B62m *3/12*

U.S. Cl. 74—594.4 **14 Claims**



The pedal frame comprises a pair of spaced legs onto each of which is telescoped an elongate extruded tread member or

block having formed therein open-ended passageway or channel means receptive of a frame leg and a reflector element, the frame legs each having a pair of spaced parallel rigid flanges outwardly turned to overlie and underlie the reflective element, thereby to buffer and protect the reflective element against twisting and compressive forces directed onto the tread member by the foot of the cyclist, and to preclude internal cutting of the tread member by the reflective element.

3,701,290

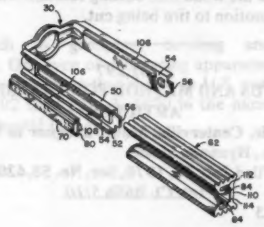
REFLECTIVE PEDAL

Carlton P. Pawsai, 47 Bryant Circle, and Robert F. Humlong, 46 Bryant Circle, both of Maysville, Ky.

Continuation-in-part of Ser. No. 56,291, July 20, 1970. This application April 29, 1971, Ser. No. 138,646

Int. Cl. B62m *3/12*

U.S. Cl. 74—594.4 **7 Claims**



The pedal frame comprises a pair of spaced legs onto each of which is telescoped an elongate extruded tread member or block having formed therein open-ended passageway or channel means receptive of a frame leg and a reflector element, the frame legs each having a pair of spaced parallel rigid flanges outwardly turned to overlie and underlie the reflective element, thereby to buffer and protect the reflective element against twisting and compressive forces directed onto the tread member by the foot of the cyclist, and to preclude internal cutting of the tread member by the reflective element.

3,701,291

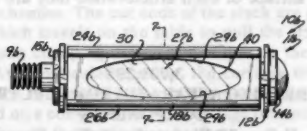
BICYCLE PEDAL HAVING LUMINOUS PORTIONS THEREON

Martin R. Baginski, Austinberg Twsp, Ashtabula, Ohio, assignor to Ashtabula Bow Socket Company, Ashtabula, Ohio

Continuation of Ser. No. 795,948, Feb. 3, 1969, abandoned. This application May 6, 1971, Ser. No. 141,024

Int. Cl. G05g *1/14*

U.S. Cl. 74—594.4 **4 Claims**



An improved bicycle pedal includes a pedal body with upper and lower sides adapted to be engaged by a rider's foot and luminescent outer sides adjacent to the upper and lower sides. To render the bicycle pedal luminous such that a cyclist's presence on the bicycle will be indicated, the outer sides have a luminescent paint supported thereon. The luminescent paint is supported on the pedal body in a manner such that no special attaching means formed as a part of the pedal body is necessary.

3,701,292

MULTIPLE SPEED HUB WITH AUTOMATIC GEAR CHANGE AND MANUAL OVERRIDE

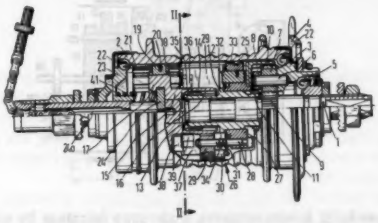
Horst Schulz, Schweinfurt, Germany, assignor to Eichtel & Sachs AG, Schweinfurt, Germany

Filed Nov. 17, 1970, Ser. No. 90,398

Claims priority, application Germany, Dec. 24, 1969, P 19 64 866.9

Int. Cl. F16h *5/46*

U.S. Cl. 74—752 E **12 Claims**



A dual speed bicycle hub with a planetary gear transmission and automatic gear shift operated by a centrifugal governor is additionally equipped with a manual override permitting manual speed selection while movement of the flyweights in the governor under the influence of centrifugal forces is blocked. The manual controls may hold the flyweights near or remote from the axis of hub rotation and thereby engage or disengage an overrunning clutch which connects a fast-moving transmission element to the hub shell.

3,701,293

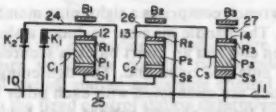
GEAR TRAIN ARRANGEMENTS

Yoicho Mori, Yokohama; Nobuo Okazaki, Chigasaki; Kunio Ohtsuka, Kamiikedai, and Tetsuya Iijima, both of Ohta-ku, Tokyo, all of Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed April 21, 1970, Ser. No. 30,496

Int. Cl. F16h *57/10*

U.S. Cl. 74—759 **1 Claim**



Gear train arrangements for transmitting a power from a driving source to a driven member at more than three speeds in one direction an another speed in the opposite direction, the gear train arrangements using basically three planetary gear sets and at least five friction elements such as clutches and brakes which are selectively actuated to selectively engage the rotary members of the three planetary gear sets to deliver an output power at the above said speeds. The gear train arrangements are specifically adapted for use in an automatic transmission system of a motor vehicle using a torque converter or fluid coupling.

3,701,294

HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

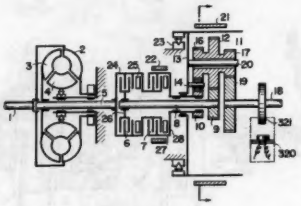
Shin Ito; Seitoku Kubo, and Takakazu Mori, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Dec. 15, 1970, Ser. No. 98,271

Claims priority, application Japan, Dec. 16, 1969, 44/101441

Int. Cl. B60k *21/00*

U.S. Cl. 74—866 **6 Claims**



A hydraulic control system for a fluid controlled automatic transmission having means for controlling fluid pressure applied to servo chambers for multiple disc clutch means and brake band means for carrying out an automatic speed change. In the system, the fluid pressure is varied depending on the load on the engine represented by a variable such as the negative pressure in the air intake manifold or the opening of the engine throttle valve.

3,701,295

TORQUE WRENCH

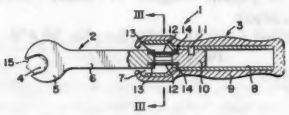
Shirou Mende, Tokyo, Japan, assignor to Kabushiki Kaisha Nakamura Seisakkusho, Tokyo, Japan

Filed Feb. 2, 1971, Ser. No. 111,841

Claims priority, application Japan, June 3, 1970, 45/47749

Int. Cl. B25b *23/14*

U.S. Cl. 81—52.4 **4 Claims**



A torque wrench comprises a tightening member and a handle member. The handle member includes a sleeve having an enlarged open end and an insert block is secured in the sleeve adjacent the enlarged open end. The tightening member and the insert block are connected with each other by means of a pair of spaced trough-shaped springs each having an arcuate transverse cross-section. A pair of the trough-shaped springs are arranged with the concaved surfaces thereof confronting each other.

3,701,296

APPARATUS FOR CUTTING STRIPS FROM VEHICLE TIRES

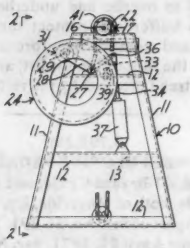
James A. Snow, Route 3, Box 405, Gadsden, Ala.

Filed Feb. 18, 1971, Ser. No. 116,489

Int. Cl. B23b *5/14*

U.S. Cl. 82—54 **7 Claims**

Apparatus for cutting an elongated strip from the tread of a vehicle tire having rotating cutters spaced from each other the width of the strip to be cut. Roller is mounted for movement toward and away from cutters with axis of roller being parallel to axis of rotation of cutters. Roller is adapted to enter tire and



engage opposite side of tread from side thereof engaged by cutters to force the tread into cutting relation with cutters and impart rotary motion to tire being cut.

3,701,297

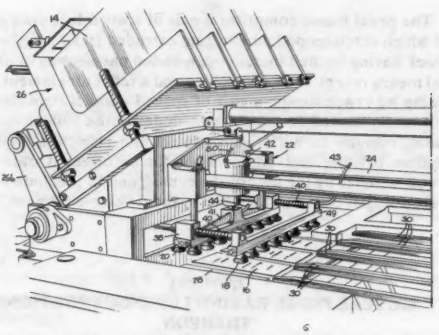
APPARATUS AND METHOD FOR TRANSPORTING ARTICLES

Joseph J. Kovic, Centerville, Mass., assignor to Packaging Industries, Inc., Hyannis, Mass.

Filed July 27, 1970, Ser. No. 58,420

Int. Cl. B65h *5/10*

U.S. Cl. 83—13 **17 Claims**



The apparatus and method of the disclosure relate to the lifting, transporting and releasing of articles from one station of a production line operation to another station. The apparatus and method particularly relate to transporting flexible blister packaged articles. The apparatus includes a plurality of transfer arms equipped with suction cups and adapted for lifting the articles and supporting them at a plurality of points along the surface of each article while they are being transported.

3,701,298

DE-REELING APPARATUS FOR ELECTRICAL COMPONENTS

Martin G. Heller, 78 Warren Road, West Orange, N.J., and Donald Kelly, 19 Mitchell Ave., Roseland, N.J.

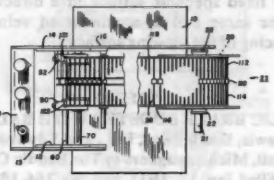
Filed July 15, 1970, Ser. No. 54,926

Int. Cl. B26d *4/11*

U.S. Cl. 83—23 **10 Claims**

Electrical components having a wire lead extending from each end are arranged in taped strips with the leads spaced in like determined intervals. The arranged spacing of the leads from each other is customarily either two hundred thousandths of an inch, three-eighths of an inch or four hundred thousandths of an inch; however, other pitches may be used. In this invention a de-reeling apparatus is provided for automatically feeding a taped strip of said electronic com-

ponents with leads arranged in a determined spacing to an adjustable wire cutting mechanism whereby the leads are cut to a desired and selected length from the component body. After cutting the leads, the electrical components are delivered to a chute whereby they are fed in an aligned manner to other ap-

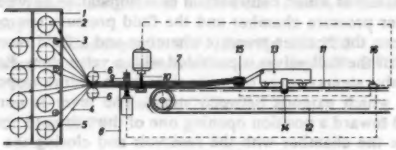


paratus such as grouping, bending and/or counting mechanisms. One type of processing apparatus may be bending apparatus similar to that shown in U.S. patent application Ser. No. 8,192 filed Feb. 3, 1970 in the name of Martin G. Heller and Donald D. Kelly.

3,701,299
APPARATUS FOR FORMING STACKS OF CLOTH WEBS WHICH ARE CUT TO LENGTH

Gunter Stumpf, 7421 Mehrstetten/Kreis Munsingen, Germany

Filed March 2, 1971, Ser. No. 120,162
Int. Cl. B26d *5/28*
U.S. Cl. 83—72 **12 Claims**



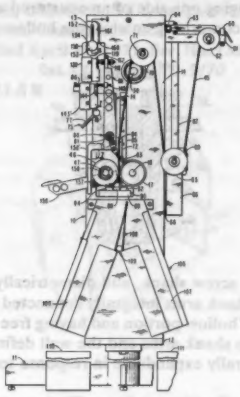
Webs of material are withdrawn from superposed cloth rolls to form a stack of layers on a table. The stack is clamped and compressed in a clamping device and the stack is cut by a cutting mechanism. The cut ends of the stack are gripped in a carriage which travels on the table to pull the stack through the now open clamping device and withdraw the webs from the rolls. At a particular position, the carriage trips a switch and the stack is clamped and cut whereupon the cut stack is transported on a conveyor and the carriage returns to its initial position adjacent the cutting mechanism.

3,701,300
MATERIAL CUTTING APPARATUS HAVING A SELECTOR

Volker Schmidt, Todds Road, R. R. No. 7, Lexington, Ky., and Erich A. Schmidt, 2415 Liberty Road, Lexington, Ky.

Filed March 9, 1971, Ser. No. 122,415
Int. Cl. B26d *7/06*
U.S. Cl. 83—80 **11 Claims**

A vertically fed strip of material is cut into segments of selected lengths by a horizontally movable cutting blade. The thickness of the strip of material is measured so that the cut segment has its thickness measured during the feed portion of the previous cycle to that in which it is cut. If the thickness of

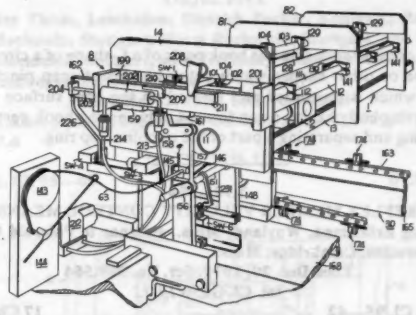


the strip of material exceeds a predetermined thickness, the measured segment is diverted into another area after being cut during the next cycle.

3,701,301
WIRE LENGTH MEASURING AND CUTTING APPARATUS

Ragnar Gudmestad, 2754 S. Waukesha Road, Waukesha, Wis., assignor to Artos Engineering Company, New Berlin, Wis.

Filed March 17, 1971, Ser. No. 125,164
Int. Cl. B26v *7/06*
U.S. Cl. 83—151 **15 Claims**



An apparatus for producing electrical wire leads has two feeding clamps which are counter reciprocated between a fixed control station and an adjustable control station whose spacing from the fixed control station determines the length of the produced wire lead. Varying the spacing between the control stations automatically varies the cycling of the apparatus as required for the increased or decreased length of the produced wire lead.

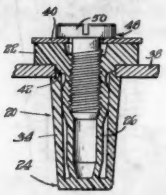
3,701,302
GROMMET TYPE FASTENER

John A. Pestka, Park Ridges, and Lloyd A. Erickson, Niles, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed March 29, 1971, Ser. No. 128,801
Int. Cl. F16b *13/06*
U.S. Cl. 85—80 **9 Claims**

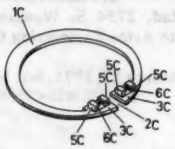
The present invention relates generally to improvements in plastic fasteners and more particularly to the provision of novel and extremely practical one-piece plastic grommet type

anchor members for accommodating the threaded shank of a screw member when positioned within a work aperture. The anchor member disclosed herein includes a head section for clampingly engaging one side of an apertured workpiece, and a shank section comprising an elongate hollow portion for ac-



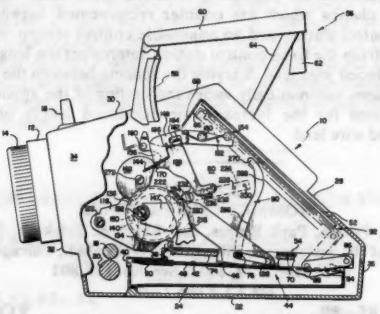
commodating a screw shank, and diametrically disposed outwardly flaring shank arms integrally connected with the entering extremity of hollow portion and having free work engaging extremities. The shank arms and the wall defining the hollow portion are laterally expandable in response to forces applied axially thereof.

3,701,303
STOP RING
Isamu Kondo, 2899 Aza Minamizuka, Yanizu-cho, Hashima-gun, Gifu Prefecture, Japan
Filed March 23, 1971, Ser. No. 127,118
Int. Cl. F16b *21/18*
U.S. Cl. 85—8.8 **6 Claims**



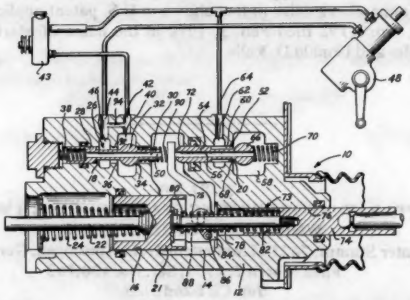
A circular stop ring has hook parts of a L-shape of a circular shape or other shapes which catch nipples of snap pinchers and which is protruded and formed on the base surface of a stop ring body having a gap formed between the hook parts by cutting and separating a part of the circular stop ring.

3,701,304
REFLEX MEMBER VELOCITY CONTROL MEANS
Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Dec. 20, 1971, Ser. No. 209,564
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 **17 Claims**



A reflex camera having an operator mechanism which positions a viewing surface closed proximate the film plane for focusing purposes, and in a subsequent exposure mode positions a reflective surface within the optical path in a position causing a coincidence of a focal plane with the film plane. A fixed specular surface is positioned in the optical path to the viewing surface in the focusing mode and said viewing surface is in spaced parallel relation to said fixed specular surface during the exposure mode. The operator mechanism is provided with positioning mechanism whereby the viewing surface approaches the fixed specular surface in a direction generally parallel to the same and at a minimized velocity so as to prevent bouncing of the viewing surface.

3,701,305
HYDRAULIC BRAKE BOOSTER WITH BALL VALVES
Richard L. Lewis, South Bend, Ind., and Edward J. Goscenski, Jr., Marshall, Mich., assignors to The Bendix Corporation
Filed Jan. 13, 1971, Ser. No. 106,189
Int. Cl. F15b *11/08, 13/10*
U.S. Cl. 91—457 **3 Claims**

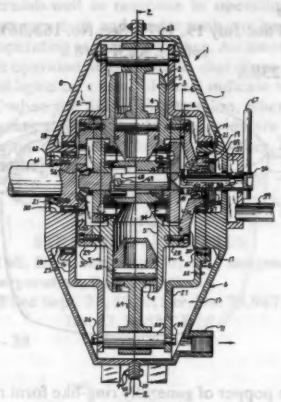


A hydraulic brake booster is disclosed which includes a pair of ball valves which control fluid communication between the booster pressure chamber and the fluid pressure source and between the booster pressure chamber and a fluid reservoir. Each of the ball valves is provided with a valve stem. Each of the valve stems engage opposite sides of an operator-operated lever which extends between stems. The lever is normally urged toward a position opening one of the valves to communicate the chamber with the reservoir and closing the other valve. However, when a brake application is effected, the lever is shifted to close fluid communication between the pressure chamber and the reservoir and initiate fluid communication between the pressure source and the pressure chamber.

3,701,306
ROTARY ENGINE
Leonard F. Eck, 418 North Hartup, McPherson, Kans.
Filed Sept. 28, 1970, Ser. No. 76,131
Int. Cl. F01b *13/06*
U.S. Cl. 91—482 **7 Claims**

A rotary fluid driven engine includes a stationary housing having a cylinder block rotatably mounted therein and having a plurality of spaced bores. Each bore has a piston reciprocally mounted therein and connected by connecting rods to an eccentric rotor which is rotatably mounted within the housing for rotation about an axis spaced from and parallel with the axis of rotation of the cylinder block. Fluid under pressure is applied is sequence into bores of the cylinder block in accordance with controlled ports to effect movement of the respective piston in the bores and rotation of the eccentric rotor. A plurality of spaced shafts are fixed relative to the

cylinder block and engage respective cam surfaces in the eccentric rotor to rotate the cylinder block and a driven shaft



connected to said block and to maintain relative rotation of the cylinder block and eccentric rotor and reciprocation of the pistons.

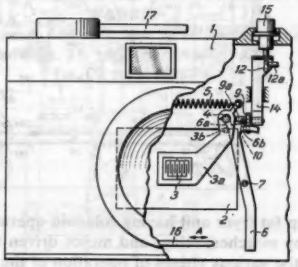
ERRATUM

For Class 95—42 see:
Patent No. 3,701,304

3,701,307
SHUTTER RELEASE MECHANISM IN PHOTOGRAPHIC CAMERAS

Karl Clos, Katzenfurt, and Fritz Keiner, Ehringshausen, both of Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany

Filed Sept. 20, 1971, Ser. No. 181,758
Claims priority, application Germany, Sept. 30, 1970, P 20 48 078.8
Int. Cl. G03b 19/12
U.S. Cl. 95—10 PO **5 Claims**

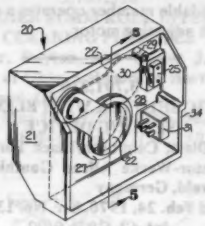


In a photographic camera including a light path barrier component in the space between the objective and the film, and further including a release rod for releasing the camera shutter, the release rod is arranged to render the barrier component movable out of the light path upon rod actuation. During the movement of the barrier component the latter reacts on the release rod and moves it further, thereby eventually releasing the camera shutter automatically and independently from the camera operator.

3,701,308
PHOTOGRAPHIC CAMERA EXPOSURE CONTROLLING MEANS

Stuart C. Davis, Charlotte, N.C., assignor to Photo Corporation of America, Charlotte, N.C.

Filed April 19, 1971, Ser. No. 135,209
Int. Cl. G03b 9/10, 9/70
U.S. Cl. 95—11.5 R **4 Claims**

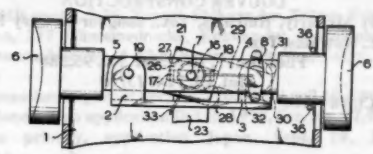


An exposure controlling subassembly for a photographic camera wherein a shutter is oscillated about a pivot axis from a light blocking position wholly occluding a shutter aperture to an exposure position wherein the shutter aperture is open and a flashtube controlling electrical switch is actuated by the shutter member upon movement thereof to the exposure position. The subassembly containing the shutter is moduarly removable from the photographic camera and replaceable in the event of failure. The shutter within the subassembly is mounted for oscillatory movement and is electrically operated.

3,701,309
PHOTOGRAPHIC CAMERA WITH MOTORIZED FOCAL LENGTH AND DISTANCE ADJUSTMENT OF THE OBJECTIVE

Heinz Thiele, Leinfelden; Dietrich Becker, Stuttgart; Roland Hochstein, Stuttgart; Horst Rockstroh, Stuttgart, and Hans Lieckfeldt, Stuttgart, all of Germany, assignors to Zeiss Ikon Aktiengesellschaft, Stuttgart-S, Germany

Filed Nov. 2, 1970, Ser. No. 86,213
Claims priority, application Germany, Nov. 4, 1969, P 19 55 317.4
Int. Cl. G03b 3/10
U.S. Cl. 95—45 **6 Claims**



A photographic camera is provided with an objective whose focal length and distance are adjusted by a motorized control device which includes at least one one-armed lever pivotally supported at one end in the camera housing and having at its other free end a manually operable handle for initiating the operation of two motors, one of which effects an adjustment of the focal length while the other effects a distance adjustment of the objective.

In one embodiment of the invention two one-armed levers are employed which are disposed parallel to one another and are operatively connected with each other in such a manner that either one of the same may be used to effect a motorized adjustment of the focal length and the distance of the camera. The free ends of these two one-armed levers extend horizontally in opposite directions and each of said free ends has an operating handle attached thereto.

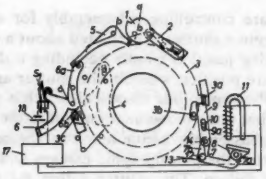
In another embodiment of the invention the one-armed lever is provided with a handle which is slidable along the outer camera wall and carries an actuating member for a switch which controls a focusing motor. A second handle which is axially movable into a recess of the first handle is operatively connected with a slidable member which is slidably and also pivotally mounted on a stationary pin in the camera housing. When the second handle is pushed into the first handle the slidable member operates a switch which controls a focal length adjusting motor.

3,701,310

PHOTOGRAPHIC SHUTTER WITH ELECTRONIC TIME SETTING DEVICE

Ernst Hermann Dietz, Calmbach/Black Forest, Germany, assignor to Prontor-Werke Alfred Gauthier GmbH, Calmbach/Schwarzwald, Germany

Filed Feb. 24, 1970, Ser. No. 13,449
Int. Cl. G03b 9/00
U.S. Cl. 95—53 E **2 Claims**



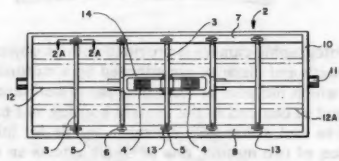
A photographic shutter includes a reciprocating drive element that places the shutter segments in the open and closed position and cooperates with an electronically controlled time setting device having an electromagnetic open-time-block operable to hold the drive element in the open position during the exposure time. The time setting device has a contact switch operable by a shutter release member to switch on the time setting device. Advantageously a nose is provided on the shutter release member which is engagable with a pin on the drive element during the opening movement of the segment drive element. The engagement of the nose with the pin prevents the return of the shutter release member for the period of time during which the drive element is blocked by the electromagnetic open-time-block.

3,701,311

LOUVER CONSTRUCTION

Shirley McLarty, Hutchins, Tex., assignor to Cary Products, Inc., Hutchins, Tex.

Filed Dec. 7, 1970, Ser. No. 95,588
Int. Cl. F24f 13/10
U.S. Cl. 98—110 **4 Claims**



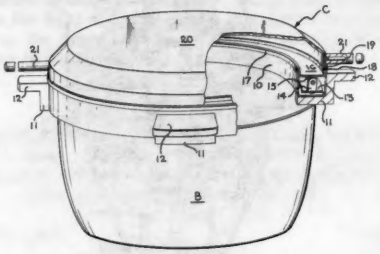
An air conditioner louver construction which permits easy insertion of a control wheel into the frame of the louver by virtue of a unique approach, whereupon the control wheel is locked into place by a novel frame structure that permits rotation in each direction and positively prevents inadvertent dislocation of the control wheel from the louver frame, while also providing a reduced complexity and increased air volume in a louver construction.

3,701,312

CORN POPPER

Myron D. Martin, 6632 Maplewood Avenue, Apt. 314, Sylvania, Ohio

Filed July 19, 1971, Ser. No. 163,861
Int. Cl. A23l 1/18
U.S. Cl. 99—238.6 **5 Claims**



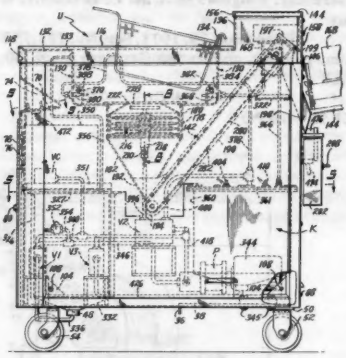
A popcorn popper of generally ring-like form rests upon the rim of a bowl or the like into which the popped corn is deflected. The corn to be popped is placed in an annular tray, below which is an heating means. A cover lid covers the tray so that the corn when popped strikes against the lid and is deflected into the bowl. Upon completion, the popper is lifted from the bowl into which all of the popped corn has been deposited.

3,701,313

DEEP FAT FRYER UNIT WITH SOLENOID VALVES AND AUTOMATIC CONTROLS

Weldon C. Boggs, Tampa, Fla., assignor to Food Research & Equipment Company, Tampa, Fla.

Filed Feb. 12, 1971, Ser. No. 115,031
Int. Cl. A47J 37/12
U.S. Cl. 99—330 **34 Claims**



A deep fat fryer unit having solenoid operated valves controlled by switches, relays and motor driven timers for controlling the various phases of operation of the unit, including the pumping of oil from a storage tank into a heater tank and then into a cooking pot, through a filter, and return to the heater tank. The oil is continuously circulated through the heater tank and may be circulated through the cooking pot or bypass the cooking pot. A removable crumb conveyor continuously removes crumbs from a crumb well at the lower end of a filter bowl opening into the cooking pot and containing the filter. A vacuum switch is connected with the inlet of the pump and is set to close when the filter is about 50 percent clogged. Closing of the vacuum switch automatically effects return of the oil from the cooking pot to the storage tank and precludes resumption of normal cooking operations until after

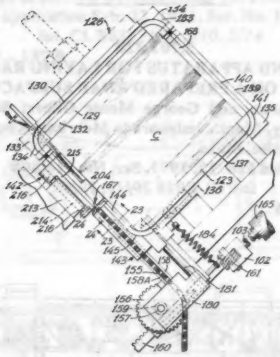
the filter has been cleaned. Upon removal of the filter and crumb conveyor, a pump-out adapter can be mounted in the filter bowl together with a pump-out hose and the oil pumped out of the crumb-well in response to operation of a sump switch. The storage tank and heater tank can be emptied one at a time by operating separate switches. An emergency STOP switch can be operated at any time to shut down the unit. Automatic signal lights on a control panel indicate when the unit is turned on, when the unit is in operation, when the heating grids are operating, when the heating grids are not working and oil is being circulated through the filter, and when a change of the filter is required.

3,701,314

STRAPPING APPARATUS

Herbert G. Tull, III, Charlottesville, Va., assignor to Hoerner Waldorf Corporation, Ramsey, Minn.

Filed Sept. 21, 1970, Ser. No. 73,967
Int. Cl. B65b *13/10*
U.S. Cl. 100—28 **20 Claims**



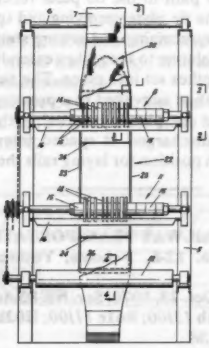
A hopper is provided which is filled with a stack of paper bags or other material to be baled. The bags are transferred to a compression area where the stack is compressed. Straps are drawn about the stack and secured. The strapped bale is then discharged.

3,701,315

APPARATUS FOR PRINTING ON TUBULAR KNITTED FABRIC

Roderick A. Maund, 54 Pemberton Street, Botany, Wales

Filed Sept. 21, 1967, Ser. No. 669,602
Int. Cl. B41f *17/38*
U.S. Cl. 101—37 **1 Claim**



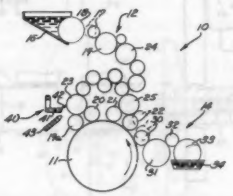
An apparatus for simultaneously printing on both sides of tubular fabric and having at least one pair of coacting printing rolls contacting both sides of the fabric and being supplied with coloring material. A spreader is disposed within the tubular fabric to hold the fabric in a spread out condition while passing between the printing rolls. Coacting support rolls act to hold the spreader in position between the printing rolls as the fabric passes over it.

3,701,316

INK AND DAMPENER FORM ROLL INTERRUPTION FOR CLEANING PURPOSES

Peter A. Sylvester, Dayton, and Walter J. Wajciechowski, Cleveland, both of Ohio, assignors to Harris Intertype Corporation, Cleveland, Ohio

Filed May 18, 1970, Ser. No. 38,009
Int. Cl. B41f *7/40, 31/34, 35/02*
U.S. Cl. 101—148 **3 Claims**



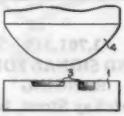
A lithographic printing press includes a rotatable plate cylinder for carrying a printing plate. An ink distribution system applies ink to the plate, and a dampener solution distribution system applies a dampening solution to the plate. Both the ink distribution system and the dampening solution distribution system include form rolls which have a cooperative fluid-transferring relationship with the plate. The dampener form roll carries both ink and dampening solution during printing. During wash-up or cleaning of the ink distribution system, the form rolls of the ink distribution system are moved away from the plate cylinder, and an ink-cleaning solution is distributed through the system. In accordance with the present invention, means is provided for transmission of the ink-cleaning solution from the ink distribution system to at least the dampener form roll to effect cleaning of at least the dampener form roll during cleaning of the ink distribution system.

3,701,317

METHOD FOR PRINTING ELECTRICAL CIRCUITS ON SUBSTRATES

Hiroshi Miyamoto, 5-36, Yoyogi, Shibuya-ku, Tokyo; Tsuyoshi Isojima, 217 Ohmamedo-cho, Kohoku-ku, Yokohama-shi, and Osamu Minowa, 4-32-6, Sammp., Pjta-ku, Tokyo, all of Japan

Continuation-in-part of Ser. No. 720,040, April 10, 1968, abandoned. This application Oct. 5, 1970, Ser. No. 77,909
Claims priority, application Japan, Sept. 19, 1967, 42/59614
Int. Cl. B41m *3/08*
U.S. Cl. 101—170 **4 Claims**



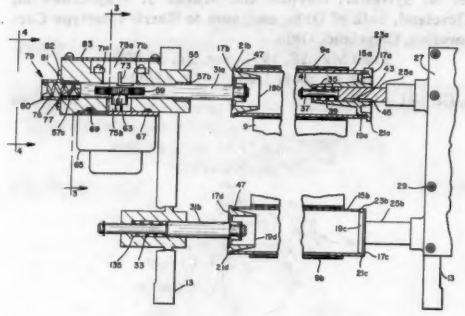
A method for forming an electrical circuit on a substrate by printing wherein a fluid ink material which consists of a resin solution and one of insulating, dielectric and conductive materials in powder dispersed in the solution is used. The ink material is replaced from an integlio plate to a silicone rubber transcriber and then printed on the substrate.

3,701,318

SKEW CONTROL APPARATUS FOR FEEDING A WIDE-WEB RIBBON IN A HIGH SPEED PRINTER

Paul R. Lozeau, and Charles J. Sabonis, both of Utica, N.Y., assignors to Mohawk Data Sciences Corporation, Herkimer, N.Y.

Filed April 15, 1970, Ser. No. 28,794
Int. Cl. B41l *27/00*
U.S. Cl. 101—336 **4 Claims**



An apparatus and method for feeding a wide-web inking ribbon in alternate directions between a pair of mandrels in an on-the-fly printer. The mandrels are detachably mounted in the printer such that their positions may be interchanged and the locations of the ribbon's left and right portions reversed. This extends the ribbon's life when printing is performed only in columns grouped at one side of the document. The apparatus includes means for sensing and correcting skew in the ribbon as it travels between the two mandrels. A photoelectric sensor, positioned adjacent an edge of the ribbon, senses any skew and in response signals a tracking device which axially moves one of the mandrels to overcome the skew. The tracking device includes a movable shaft having a series of teeth thereon which mesh with the teeth of a gear rotatable in either direction by a reversible motor in response to the output of the sensor. Where the ribbon feed is used in a "shuttle" printer which prints each line by initially printing one group of columns and then "shuttling" the document to print another group of columns in the line, a pair of sensors are used. They cause the tracking device to move the mandrel so that the ribbon alternately tracks along two paths spaced apart a distance equal to the distance the document is shuttled. This allows substantially the entire area of the ribbon to be used. Even with the usual type of on-the-fly printer which prints in all the columns of a line at one time, the ribbon preferably tracks along two paths. In this case, the distance between the two paths is equal to one-half the distance between adjacent columns so that those areas of the ribbon which would normally always be located at the spaces between the columns are used.

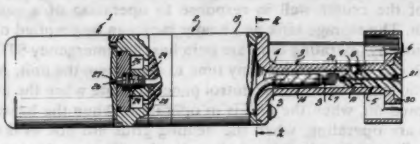
3,701,319

UNDERWATER SOUND SIGNAL FOR EXPLOSIVE ECHO RANGING

Carl A. Axelson, 190 McKay Street, Beverly, Mass.; John R. Hinves, 249 Caroline Avenue, Somerset, Mass.; Elton Y. McGann, 214 Kingswood Drive, Williamsburg, Va., and Robert M. Johnson, 110 Green Briar Drive, Clarks Green, Pa.

Filed Dec. 1, 1970, Ser. No. 93,977
Int. Cl. F42b *21/00*
U.S. Cl. 102—7 **2 Claims**

A bomb-type underwater sound signal source is disclosed wherein the explosive charge is in the form of an explosive cord which is normally coiled within the bomb casing and automatically deployed upon impact with the sea surface. The extended cord trails behind the bomb until it is detonated at a preset depth to produce an acoustic signal substantially confined to a horizontal plane.



ERRATUM

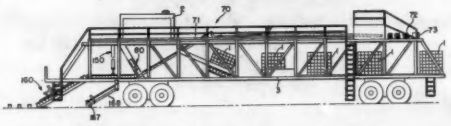
For Class 102—57 see:
Patent No. 3,701,573

3,701,320

METHOD AND APPARATUS FOR LAYING RAILROAD TIES ON A PREPARED ROAD SURFACE

Joseph G. Fearon, and George Monte Gilbert Battermann, both of Libby, Mont., assignors to Morrison-Knudsen Company, Inc., Boise, Idaho

Filed Feb. 12, 1971, Ser. No. 114,808
Int. Cl. E01b *29/32, 29/06*
U.S. Cl. 104—6 **11 Claims**



A method and means are disclosed for dispensing railroad ties at regularly spaced intervals along a prepared roadbed surface from a moving vehicle. Bundles of ties are placed in the input end of the tie laying vehicle and conveyed to a breaking station where the rows of ties making up the bundle are separated into individual ties and conveyed in sequence along a first flow path to a tie plate receiving and spike setting station. The ties have predrilled holes therein in the positions where the spikes are normally set in place. Tie plates having a requisite number of spikes associated therewith are conveyed along a second flow path to the tie plate receiving and spike setting station. At the tie plate receiving and spike setting station. At the tie plate receiving and setting station the ties are aligned in position relative to the spikes extending through the tie plates, and the spikes set into place. The ties with their associated spikes are then conveyed to a pressing station where the outer spikes are completely inserted in the railroad ties. The ties are then discharged at spaced intervals along the prepared roadbed in position for laying rails thereon.

3,701,321

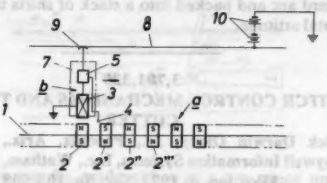
CONTINUOUS RAILWAY TRANSPORTATION SYSTEM

Geun Sam Lee, No. 12-6, 3-chome, Yushima, Bunkyo-ku, Tokyo, Japan

Filed Oct. 23, 1970, Ser. No. 83,467
Int. Cl. B61b *13/00;* B61c *11/00;* H02k *41/02*
U.S. Cl. 104—148 LM **10 Claims**

This invention relates to a continuously movable device operable by a.c. voltage on a railway powered by a linear motor. When a.c. voltage is fed to the movable device or to the

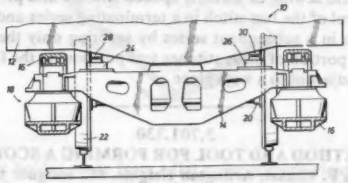
railway, a magnetic system mounted on the movable device generates magnetic attraction or repulsion between this magnetic system and another magnetic system fixed to the railway effecting the movable device to move thereon.



3,701,322
FLUID DAMPENED RAILWAY BOLSTER SPRING

Ross G. Carle, Houston, Tex., assignor to ACF Industries Incorporated, New York, N.Y.

Continuation of Ser. No. 849,105, Aug. 11, 1969, abandoned.
This application Feb. 22, 1971, Ser. No. 117,810
Int. Cl. B61f 3/02, 5/10, 5/14
U.S. Cl. 105—197 B 4 Claims

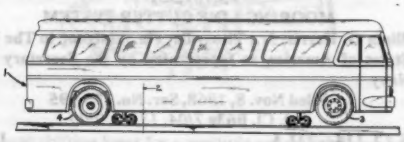


A fluid suspension system for railway vehicles having a uniformly varying spring rate to achieve a constant natural frequency in the vertical or bounce mode and to resist lateral or rocking motion of the railway car. The suspension system includes a damper supporting each end of a bolster on the side frame of a railway car truck. Each damper employs resilient material such as synthetic rubber in shear for hysteresis damping and utilizes metering of hydraulic fluid between upper and lower fluid metering chambers to provide hydraulic snubbing action during both compression and expansion of the suspension system to control vertical movement of the vehicle and to resist excessive rolling of the vehicle body. The fluid within the suspension system is maintained under a predetermined preload pressure to help support the load and to dissipate energy as the suspension system expands. Interfitting means between the bolster and the dampers maintain rotational alignment between the truck bolster and side frames.

3,701,323
CONVERTIBLE RAIL-HIGHWAY VEHICLE

Edwin W. Cox, North Kansas City, Mo., assignor to W. T. Cox Company, Camdenton, Mo.

Filed Nov. 16, 1970, Ser. No. 97,406
Int. Cl. B61d 15/00; B61f 9/00; B62d 61/12
U.S. Cl. 105—215 C 7 Claims

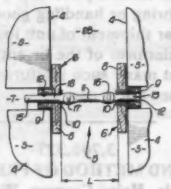


A conventional highway bus is adapted for alternate use on highways and railways by providing rail conversion units located adjacent respective road wheels of the bus. The conversion units raise the front of the bus on rail wheels to a position which deactivates the front road wheels and the rear of the bus is supported by rail wheels only to the extent that it is guided on the rails but propulsion and some braking is obtained through contact between the rails and the rear road wheels. Air bellows suspension is provided on the rail conversion units to simulate road driving characteristics and hydraulic cylinders permit the rail wheels to be withdrawn upwardly out of service during road operation.

3,701,324
BOXED PRODUCT CARLOADING

Harold C. Pierce, 234 Mountain View Avenue, Pomona, Calif.

Filed June 10, 1970, Ser. No. 44,942
Int. Cl. B61d 45/00; B60p 7/10
U.S. Cl. 105—369 B 7 Claims

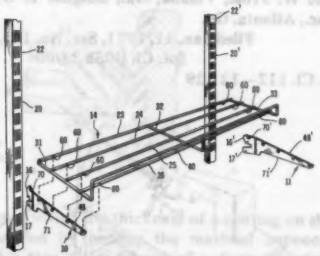


Boxed produce load for refrigerated rail cars of the type having boxes arranged in vertical stacks and the stacks aligned in plural rows running longitudinally of the car and in which the rows have a cumulative width less than the load width of the car, means being provided to expand the load to the car load width and to support the rows against lateral displacement including a longitudinal series of opposed pairs of uprights engaging the rows and rigid elements extending between and supporting the upright pairs; the rigid elements being length adjustable to selectively transversely space the rows to occupy the full load width of the car and brace the load.

3,701,325
SHELF AND BRACKET ASSEMBLY

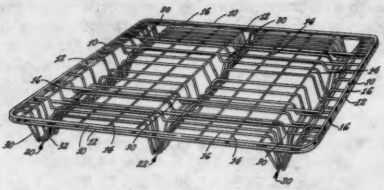
Jay G. Fenwick, Albert Lea, Minn., assignor to Streater Industries, Inc., Albert Lea, Minn.

Filed May 7, 1971, Ser. No. 141,118
Int. Cl. A47f 5/12
U.S. Cl. 108—1 2 Claims



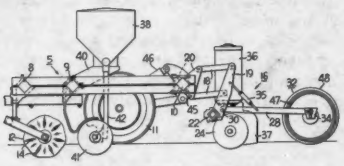
The invention relates to a shelf and bracket assembly of the type in which the bracket has hooks which are adapted to fit into slots of vertically extending support standards. The invention is directed to fastening means for attaching the shelf to the brackets which fastening means are incorporated in the design of and are integral parts of the bracket and shelf members.

3,701,326
WIRE-FORMED PALLET
Leslie E. Herman, 64 La Cuesta, Orinda, Calif.
Filed May 18, 1971, Ser. No. 144,579
Int. Cl. B65d *19/38*
U.S. Cl. 108—53 **5 Claims**



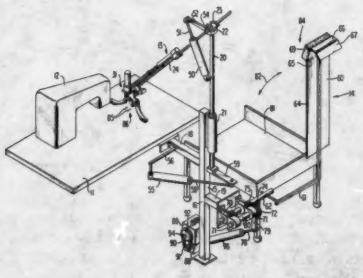
An improved wire-formed pallet is provided as a load carrying platform for storing or handling goods in a warehouse or other facility and for shipment of unit loads via rail and truck. The wire-formed platform of the invention is constructed to be nestable, so that many such platforms may be stored in a minimum space when not in use.

3,701,327
PLANTER AND METHOD OF PREPARING SOIL
Frank C. Krumholz, Hales Corners, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Continuation of Ser. No. 662,393, Aug. 22, 1967, abandoned. This application June 1, 1970, Ser. No. 41,736
Int. Cl. A01c *5/00*
U.S. Cl. 111—81 **2 Claims**



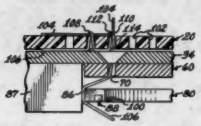
A combination of rolling ground contacting tools for preparing a seed bed, fertilizing, dropping seed and covering and forming the soil about the seed under existing conditions without previous soil preparation.

3,701,328
GARMENT RETRIEVER AND STACKER
Wade W. Frost, Vidalia, Ga., assignor to Oxford Industries, Inc., Atlanta, Ga.
Filed Jan. 11, 1971, Ser. No. 105,451
Int. Cl. D05b *33/00*
U.S. Cl. 112—121.29 **4 Claims**



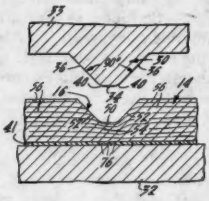
A garment retriever and stacker for use in the manufacture of shirts or the like wherein the collar portion of a shirt is grasped and lifted away from a sewing machine so that the remaining portion of the shirt tails in a downward direction, the shirt collar portion is released, and the shirt is urged in a downward arc and packed into a stack of shirts in a generally horizontal attitude.

3,701,329
STITCH CONTROL MECHANISMS AND THREAD CUTTER
Frederick Darwin Olney, Jr., Phoenix, Ariz., assignor to Honeywell Information Systems, Inc., Watham, Mass.
Filed Jan. 4, 1971, Ser. No. 103,508
Int. Cl. D05b *65/02*
U.S. Cl. 112—252 **11 Claims**



Stitch control mechanisms modify a sewing machine to provide for the sewing of variably spaced stitches and provide for the control of the last stitch in a terminating series and the initial stitch in a subsequent series by severing only the bobbin supplied portion of these stitches and positioning the free ends thereof adjacent to a workpiece.

3,701,330
METHOD AND TOOL FOR FORMING A SCORE
Christian F. Kinkel, Arlington Heights, Ill., assignor to American Can Company, New York, N.Y.
Division of Ser. No. 782,919, Dec. 11, 1968, Pat. No. 3,650,006. This application March 25, 1971, Ser. No. 127,950
Int. Cl. B21d *51/26*
U.S. Cl. 113—15 A **9 Claims**

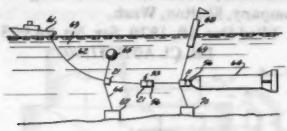


A score having improved abuse and fatigue resistance qualities is formed by using a scoring punch which is specially profiled to obtain a smooth continuous flow of the displaced metal, thereby eliminating the "dead zone" of compressed, work-hardened metal which exists at the base of conventional scores.

3,701,331
MOORING LINE CUTTER SYSTEM
William G. Harris, Jr., Titusville, Fla., assignor to The United States of America as represented by the Secretary of the Navy
Filed Nov. 8, 1968, Ser. No. 775,995
Int. Cl. B63g *7/04, 13/00, 9/00*
U.S. Cl. 114—221 A **1 Claim**

A mooring line cutter is incorporated in a sweep system that is towed underwater by a ship or other tractor vehicle. It includes a cylinder that has a hole drilled along the longitudinal axis thereof which allows it to be threaded on a sweep cable. A

beveled cutting edge around the forward periphery thereof may include either a knife edge or a plurality of sharp teeth.



The cylinder may be made either as a one piece unit or as several pieces joined together by bolts or screws for easy mounting on said sweep cable.

3,701,332

BOOK MARK AND PAGE HOLDING DEVICE

Doyle K. Brooks, 413 W. 19th, Hays, Kans.

Filed April 14, 1969, Ser. No. 815,631

Int. Cl. B42d 9/00

U.S. Cl. 116—119 **3 Claims**

A page holder made from a flat piece of fairly rigid material into the form substantially in the shape of an "E." The center portion can be shaped in the form of a tapered section which is wider at the bottom where it is joined to two arms extending therefrom. Each of the arms has a piece extending therefrom which is substantially parallel th the sides of the center portion. The arms and the center portion form two slots of different spacing for holding different numbers of pages. The center portion can also be covered with a rubber material to assist in keeping the book page holder positioned.

3,701,333

GEAR SHIFTING MECHANISM FOR A BICYCLE TRANSMISSION

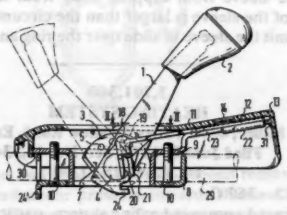
Hans Joachim Schwerdhoefer, Schweinfurt on Main, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed Aug. 25, 1971, Ser. No. 174,790

Claims priority, application Germany, Sept. 1, 1970, P 20 43 225.1

Int. Cl. G09f 9/00

U.S. Cl. 116—124 R **9 Claims**



The gear shifting lever for a multiple-speed hub in a bicycle is attached to the bicycle frame by two clamping plates which are connected by screws, and of which one carries the support for the lever. The support and the clamping members are covered by a housing having a viewing aperture for sequential display of indicia indicating the transmission ratio as the lever is pivoted, the indicia being arranged on a carrier coupled to the leer and guided between one of the clamping plates and the housing.

3,701,334

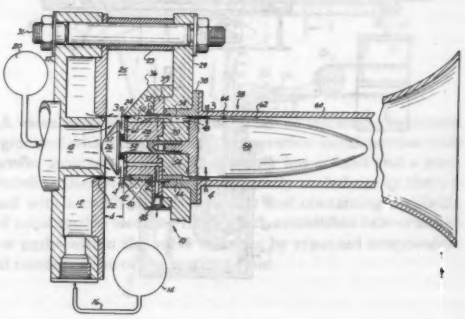
ANNULAR SLOT PROPORTIONAL JET AMPLIFIER FOR A FLUIDIC SOUND GENERATOR

Bernard R. Teitelbaum, Birmingham, Mich., assignor to The Bendix Corporation

Filed Sept. 14, 1970, Ser. No. 71,711

Int. Cl. B06b 3/00

U.S. Cl. 116—137 **11 Claims**



An annular slot proportional jet amplifier is disclosed in which an annular control jet is used to deflect an annular power jet from an annular receiver into a low pressure region to provide a high gain proportional jet amplifier. A fluidic sound generator is also disclosed utilizing an annular slot proportional jet amplifier, with the annular receiver coupled to a centerbody and horn radiator structure in order to provide high intensity sound generation.

3,701,335

COATING APPARATUS FOR SHEET MATERIAL

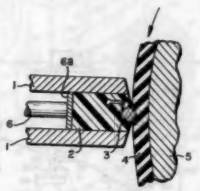
Wolfgang Barnscheidt, Straberg/Neuss, Germany, assignor to Feldmuhle Aktiengesellschaft, Dusseldorf, Germany

Filed Feb. 12, 1971, Ser. No. 114,845

Claims priority, application Germany, Feb. 17, 1970, P 20 07 067.1; July 9, 1970, P 20 34 004.9

Int. Cl. B05c 11/02, 1/08

U.S. Cl. 118—104 **9 Claims**



In an apparatus in which the thickness of a coating on sheet material is controlled by passing the material between a backing roll and a thin, rotating rod of a doctor blade assembly, the rod is rotatably embedded in a confined body of elastomeric polyurethane or synthetic rubber. A circumferential portion of the rod is exposed between two lips of the body which is under compressive stress between the confining walls and the rod. Lubricant and cooling liquid is fed to an axial groove open toward the receptacle of the body, mainly discharged axially from the groove and partly withdrawn by suction from another groove circumferentially spaced from the first groove in the direction of rod rotation.

3,701,336

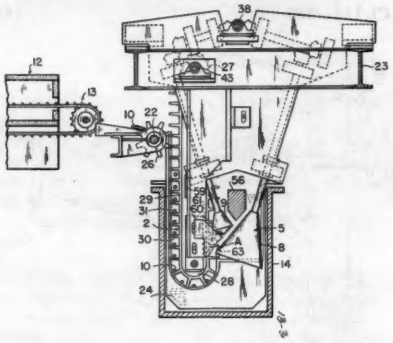
PIPE COATING APPARATUS

William M. McConnell; William H. Bradley, both of Ben Avon; Howard E. Chappel, Butler; George P. Whitfield, Greentree, and Raymond L. Carey, Pittsburgh, all of Pa., assignors to Taylor-Wilson Manufacturing Company, Pittsburgh, Pa.

Division of Ser. No. 723,411, April 23, 1968, Pat. No. 3,559,794. This application March 16, 1970, Ser. No. 24,460

Int. Cl. B05c *3/10*

U.S. Cl. 118—423, 9 Claims



An automatic processing line having a conveyor system continuously feeding workpieces to chain sinkers which lower the workpiece into a process area at a slope and raise the workpiece from the process area at a slope and a screw apparatus which removes the workpiece from the chain sinker in the process area and conveys it to a continuous dragout conveyor for removal.

3,701,337

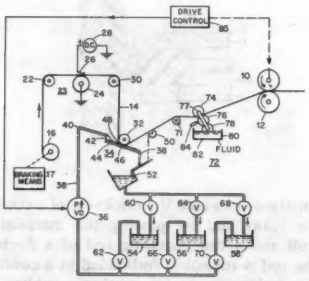
PRINTING APPARATUS

Ronald F. Borelli, Medfield, and Donald J. Garand, Chelmsford, both of Mass., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Dec. 29, 1969, Ser. No. 888,769

Int. Cl. G03g *13/00*

U.S. Cl. 118—637 14 Claims



A recording medium is printed upon by exciting it, developing the medium in a toning liquid, and drying the medium. The toning liquid is applied by passing the medium longitudinally around an arc and pumping the toning liquid to flow so that its surface touches the medium on only one face. The latter preferably is substantially liquid impenetrable.

3,701,338

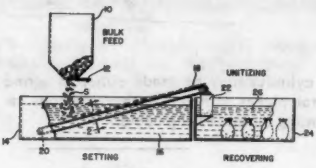
OYSTER SETTING METHOD AND APPARATUS

David C. McMillin, Shelton, Wash., assignor to Olympia Oyster Company, Shelton, Wash.

Filed Dec. 10, 1970, Ser. No. 96,905

Int. Cl. A01k *61/00*

U.S. Cl. 119—4 7 Claims



Oyster shells are fed in bulk from a storage hopper and allowed to free-fall into a setting tank containing liquid and free-swimming oyster larvae. The shells land on their convex side on a moving open-mesh conveyer. The conveyer transports the shells through the liquid and out of the tank. As the shells are passed through the liquid the larvae set on the convex undersides. As the shells leave the setting tanks with the larvae attached they are utilized in open-mesh bags and then placed in a recovery tank for a few days until suitably conditioned for transporting and placing in natural oyster beds.

3,701,339

CHOKER-TYPE COLLAR

Arthur E. Kemmerling, 955 Ringgold Street, Pittsburgh, Pa.

Filed May 18, 1971, Ser. No. 144,449

Int. Cl. A01k *27/00*

U.S. Cl. 119—106 1 Claim

A choker-type collar having a ring at each end of the collar with a sleeve guard member inserted along the collar between the two rings. The sleeve has an opening at each end of the sleeve to permit it to slide along the collar. One opening of the sleeve is smaller than the circumference of one of the rings to prevent the sleeve from slipping away from the collar. The other end of the sleeve is larger than the circumference of the ring to permit the sleeve to slide over the ring and cover it.

3,701,340

HEATING SYSTEM

Avy Lewis Miller, 4090 Valley Meadow Road, Encino, Calif.

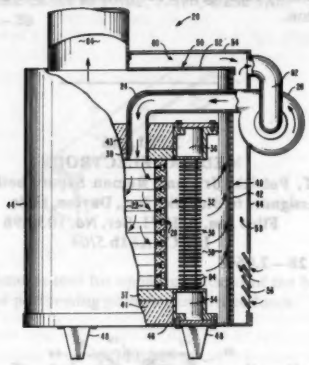
Filed June 8, 1970, Ser. No. 44,334

Int. Cl. F22b *21/00*

U.S. Cl. 122—367 C 10 Claims

An improved compact heating system, particularly adapted for heating water and generating steam, includes a combustible gas supply zone, a combustion chamber therearound in the form of a hollow burner element having a plurality of radial channels in heat exchange relation with an array of heat exchange elements spaced peripheral therefrom, and gas ignition means. The channels are preferably of special configuration to improve heat transfer efficiency. The system is adapted

to efficiently burn a high velocity stream of combustible gases and develop a wide range of B.T.U. outputs per hour, including multi-million B.T.U. output, while retaining advantages of larger types of heating systems. Improved baffles for heat exchanger elements are also provided.



3,701,341

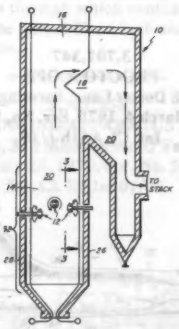
APPARATUS AND PROCESS FOR SLAG DEPOSIT REMOVAL

Cullie B. Willis, Jr., Westfield, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.

Continuation of Ser. No. 851,875, Aug. 21, 1969, abandoned. This application March 18, 1971, Ser. No. 125,773

Int. Cl. F22b *37/52*

U.S. Cl. 122—392 **7 Claims**



An apparatus and process for slag deposit removal wherein water is injected under pressure towards the heat absorption surface in the furnace section of a vapor generator to create a thermal shock and a mechanical force which causes the slag deposits on the surface to separate therefrom. A nozzle is provided which has a plurality of orifice units extending at different acute angles with respect to a plane perpendicular to the longitudinal axis of the body portion of the nozzle, so that when the nozzle is rotated, a plurality of spiral streams of cleaning fluid are injected.

3,701,342

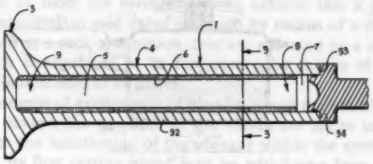
VALVE MEMBER

Herbert B. Owsley, and Stuart E. Bunn, both of P.O. Box 388, Shawnee Mission, Kans.

Filed March 8, 1971, Ser. No. 121,933

Int. Cl. F01l *3/14*

U.S. Cl. 123—41.16 **7 Claims**



A valve member operative for use in an internal combustion engine and which incorporates evaporation-condensation heat transfer structure. The valve member has a head and a stem extending therefrom and a hermetically sealed cavity therein lined with a capillary flow medium and containing a volatile and condensible working fluid which establishes heat-transfer flow paths within the valve member by repeated evaporation and condensation of the working fluid.

3,701,343

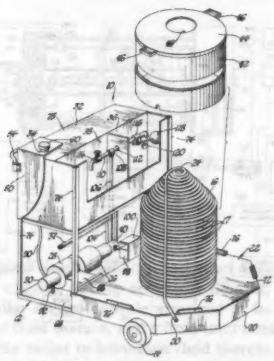
STEAM CLEANER

Regis D. Bowers, Detroit, Mich., assignor to Chausse Manufacturing Co., Inc., River Rouge, Mich.

Filed Feb. 16, 1971, Ser. No. 115,551

Int. Cl. F22b *21/26*

U.S. Cl. 126—271.2 R **18 Claims**

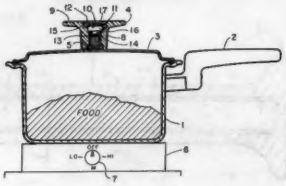


A portable steam cleaner comprising a wheeled carriage, an enclosure on the forward part of the carriage defining a swirl chamber having a horizontally tangential air input and a vertically axial outlet, a heating coil having spaced convolutions disposed over the chamber such that air passes upwardly therethrough from the chamber, and an oil burner for heating the air which is driven through the swirl chamber and the heating coil by means of a blower. A float valve controlled water supply is disposed toward the upper rear of the carriage along with a soap supply. A hand-held steam gun is disclosed.

3,701,344
WATERLESS COOKING APPARATUS

Henry M. Walls, DuBois; George M. Sayers, Clearfield, and Noel B. Walls, Reynoldsville, all of Pa., assignors to Thermo-Sentinel Corporation, DuBois, Pa.

Filed Aug. 24, 1970, Ser. No. 66,314
Int. Cl. A47j *27/212*
U.S. Cl. 126—388 6 Claims

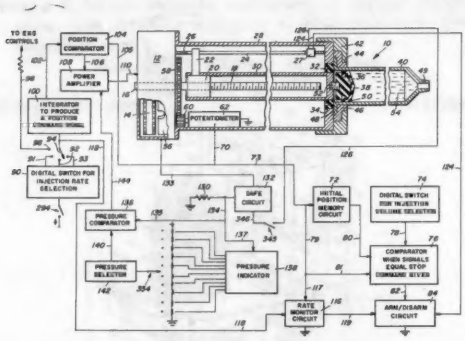


A waterless cooking apparatus is improved by the provision of a knob having an indicator which by its change of color will enable the cook to manipulate the heat in order to obtain the best results in using waterless cookware. This knob is formed of heat insulated material and has embedded therein a heat sink in metallic contact with an attaching means in direct thermal contact with the cookware cover. A layer of color reversible temperature-sensitive material is positioned on the surface of the heat sink closest to the top of the knob and exposed for observation by the cook. The method of manipulating the heat supply to this cookware to make advantageous use of the two color changes utilized during the normal cooking cycle.

3,701,345
ANGIOGRAPHIC INJECTOR EQUIPMENT

Marlin S. Heilman, Gibsonia; Rudolph J. Kranys, Pittsburgh, and Donald Jones, Churchill, all of Pa., assignors to Medrad, Inc., Allison Park, Pa.

Filed Sept. 29, 1970, Ser. No. 76,491
Int. Cl. A61b *06/00*; A61m *05/00, 05/20*
U.S. Cl. 128—2 R 33 Claims

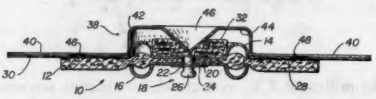


An angiographic injector control system for delivering a controlled volume of injection fluid is described. The injector has a motor driven piston for ejecting fluid from a syringe cartridge contained within a pressure jacket. The drive motor is operated in accordance with a command voltage corresponding to an incremental position of the injector piston, the command position signal also corresponding to the volume of fluid to be ejected from the cartridge. This command position voltage signal is compared to an actual position voltage to produce an error signal for operating the drive motor, whereby the syringe piston follows the position command signal. Volume selector means produce a volume signal corresponding to a desired maximum volume of fluid to be ejected; this volume signal is compared to the sum of the position command increments, producing a stop signal when the position command signal equals or exceeds the volume limit signal. Thus, the injector control system regulates the injection of fluid by sensing and controlling the position of the injector piston.

3,701,346
MEDICAL ELECTRODE

Charles T. Patrick, Jr., and Roman Szpur, both of Dayton, Ohio, assignors to Bionetics Inc., Dayton, Ohio

Filed Jan. 4, 1971, Ser. No. 103,498
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 E 9 Claims

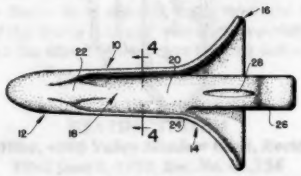


An electrode for attachment to the skin includes a pad of foamed material soaked with electrode jelly positioned in a low profile cup member and engaging an electrical conductor at the base of the cup member. Because the pad is wetted by the jelly, it adheres to the cup member and conductor. The cup member and soaked pad are protected by a cover, a projecting portion of which engages and holds the pad in the cup member. The area of the projecting portion engaging the pad has a relatively small area in comparison to the area of the pad engaging the cup member base and conductor. The pad therefore has comparatively little adhesion to the projecting portion and the cover can be removed from the electrode without pulling the pad away from the cup member.

3,701,347
PROCTOSCOPE

Joseph W. Belkin, 58 Dorset Lane, Farmington, Conn.

Filed March 4, 1970, Ser. No. 16,466
Int. Cl. A61b *1/30*
U.S. Cl. 128—5 5 Claims



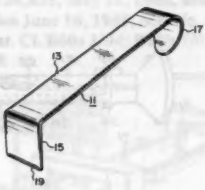
A unitary disposable proctoscope of plastic or the like comprising an elongated body with a gradually curved front end portion, an elongated rearwardly open viewing slot with a gently arcuate front end wall, a relatively wide flaring flange at a rear portion of the body serving as an external rectractor, and an integral handle disposed rearwardly of the flange.

3,701,348

CHISEL RETRACTOR TOOL

Joseph Navara, 2105 West Walton Street, Chicago, Ill.

Filed Dec. 9, 1970, Ser. No. 96,350
Int. Cl. A61b *17/02, 17/16;* B25d *3/00*
U.S. Cl. 128—20 1 Claim



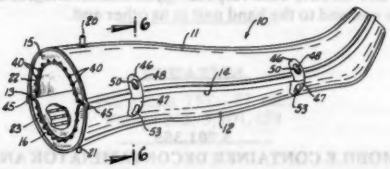
An instrument or tool for opening sections of the body such as the skull for performing pathological procedures.

3,701,349

BI-VALVED CAST

Leighton W. Larson, c/o The Waconia Clinic, 46 West Main Street, Waconia, Minn.

Filed May 13, 1971, Ser. No. 142,907
Int. Cl. A61n
U.S. Cl. 128—82.1 7 Claims



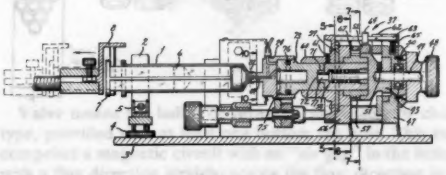
A bi-valved cast for immobilizing broken limbs in which complementary rigid shells, each having an inflatable liner, are releasably secured together about the limb or other body portion to be immobilized, so that upon pressurizing the liners, the limb or other body portion will be immobilized. A significant feature of the disclosed invention resides in the provision of air entry passages through which ventilating air reaches the interface between the immobilized limb and the inner surfaces of the inflatable liners.

3,701,350

BLOOD EXCHANGING APPARATUS AND PROCESS

Harvey C. Guenther, 325 Main Street, O'Fallon, Ill.

Filed July 28, 1970, Ser. No. 58,829
Int. Cl. H61m *01/02*
U.S. Cl. 128—214 B 5 Claims



In a blood exchanging apparatus useful for automatically withdrawing deleterious blood from the body, discharging said blood, and supplying a like quantity of specified blood for infusion into the bloodstream of the body, a syringe is coupled to a valve that includes a series of ports that provide passage for accomplishment of the foregoing select blood transferring functions, with the plunger of said syringe connecting with a carriage that threadedly engages to a feed screw that may be selectively turned in either direction by means of a reversing motor, with the turning of said motor being reversible by means of the actuation of limit means or switches that are functionally disposed to said feed screw and operative through the movements of said carriage for effecting their select actuation and reversal of said motor and feed screw. The valve is also sequentially set to provide for the select movements of blood into or from the syringe, and to achieve this a gear means connecting to said valve is turned by means of a drive means, such as a rack and pinion, that are actuated by a solenoid which is regulated in its functioning by means of the aforesaid limit means or switches.

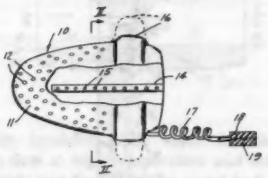
In the process of exchanging of blood through the use of the aforesaid device, the passages of the valves are set to coordinate with the functioning of the plunger within the syringe, so that in its first setting blood may be withdrawn from the body, and then discharged through a second setting of said valve, with the valve then being adjusted to provide for the drawing of specified blood into said syringe which may then be infused into the bloodstream of the body through a final adjustment and setting of said valve. All of these functions are coordinated through the circuit relationship between the alternate movements of the syringe means by operation of the feed screw, which operations are changed through actuation of the switch means, which also signals the timed operation of the solenoid and its interconnected gear and valve means so that selective passages of said valve may be opened in sequence with the operations of said syringe.

3,701,351

INFLATABLE INTRAVAGINAL APPLICATOR FOR ANIMALS

Douglas G. Harvey, R. R. No. 1 Freeport Road, Sterling, Ill.

Filed June 28, 1971, Ser. No. 157,273
Int. Cl. A61m *7/00*
U.S. Cl. 128—260 6 Claims



An intra-vaginal device for hogs and other animals comprising a flexible capsule having apertures therein, a fluid-tight distendible collar on the capsule arranged to be enlarged by introduction of fluid therein, and a fluid inlet conduit communicating with the collar to introduce fluid therein, the conduit being self-retractable during use.

3,701,352

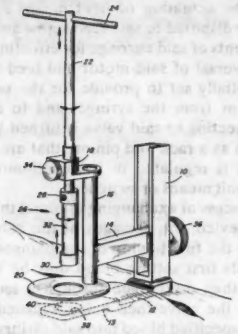
ABDOMINAL WALL PUNCH

Nathaniel L. Bosworth, 1701 Fincastle Rd., Lexington, Ky.

Filed Dec. 1, 1970, Ser. No. 94,012
Int. Cl. A61b *17/32;* B23d *21/14;* B23b *49/00*
U.S. Cl. 128—305 9 Claims

A surgical instrument to cut a clean defect in an abdominal wall needed for ileostomies and colostomies. The instrument

has an "L" shaped body with a lower arm which is inserted through an incision and a circular cutter supported from an



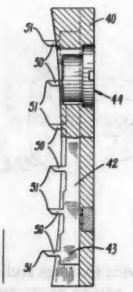
upper arm is pushed and turned through the tissue layers above the lower arm.

3,701,353

CIGARETTE PERFORATING APPARATUS

Arthur R. Pasquine, 106 Eldorado Drive and Harland J. Snow, 9424 Camrose Road, both of Richmond 23229; and Edward E. Wagner, 12500 Winfree St. (P.O. Box 122), Chester 23831, all of Va.

Filed Dec. 9, 1970, Ser. No. 96,486
Int. Cl. A24c *5/2, 5/46*
U.S. Cl. 131—23R 14 Claims



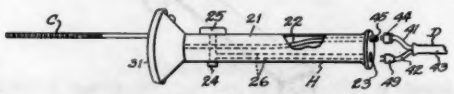
A mechanism for perforating cigarettes in conjunction with the operation of assembling filter sections to the cigarettes including the application of a tipping wrap connecting the filter section to the tobacco rod section the mechanism embodying a stationary shoe peripherally adjacent a cigarette carrier drum whereby the tipping paper is wrapped around the sections by rolling the rod sections between the drum and shoe, the shoe having in its surface needle points which penetrate the rod assembly as it is rolled, the needle points being provided by a thin strip of sheet metal appropriately ground at an edge facing the rod sections to provide an arc-shaped row of needles adapted to result in a peripheral row of venting apertures in the assembled cigarette.

3,701,354

POWER ACTUATED HAIR TEASING APPARATUS WITH FLEXIBLE CABLE DRIVE

Charles C. May, 11605 Washington Place, Los Angeles, Calif.

Filed June 14, 1971, Ser. No. 152,547
Int. Cl. A45d *24/00*
U.S. Cl. 132—11 A 7 Claims



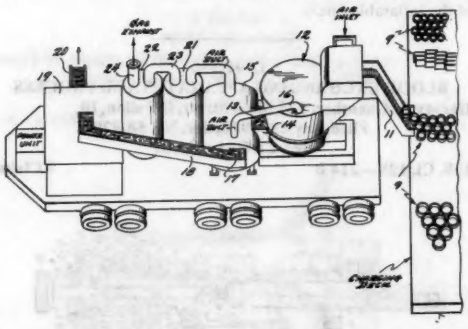
A teasing comb is releasably held by a lightweight hand unit containing gearing for imparting a purely laterally reciprocating movement to the comb. The hand unit also embodies a thumb switch for power control and a spring-loaded drive release responsive to entanglement of the comb in the hair. Drive is transmitted to the hand unit from a remotely located motor-reduction gear unit through a flexible drive cable, associated with an electric power lead cord extending to the control and automatic release switches, both cable and cord being embodied in a flexible transmission unit having at each end a pair of releasable couplings for connecting the drive cable and electric cord respectively to the motor-gear unit at its one end and to the hand unit at its other end.

3,701,355

MOBILE CONTAINER DECONTAMINATOR AND RECYCLE METAL RECLAIMER

Jack H. McKean, Kansas City, Mo., assignor to Baychem Corporation, Kansas City, Mo.

Filed Nov. 24, 1971, Ser. No. 201,940
Int. Cl. B08b *7/04*; C23g *5/00*
U.S. Cl. 134—19 6 Claims

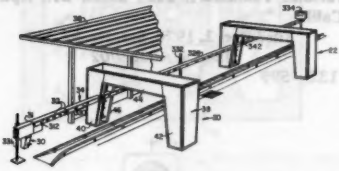


A method for recycling, as high grade steel scrap, spent metal pesticide containers by shredding the containers into reduced nugget-sized pieces followed by incinerating at a temperature sufficient to burn off all organic residual matter in the can using as combustion air for incineration the pesticide contaminated exhaust air generated by the shredder. A further step includes the removal by after-burning and scrubbing of any residual pesticide entrained in the incinerator off-gases.

3,701,356
CAR WASHING APPARATUS

Daniel C. Hanna, 1133 S.W. Rivington Dr., Portland, Oreg.; Jack F. Ebeling, and David Hildebrand, both of Portland, Oreg., assignors to said Hanna by said Ebeling and Hildebrand

Continuation of Ser. Nos. 526,161, Feb. 9, 1966, abandoned, and Ser. No. 734,835, May 31, 1968, abandoned. This application June 16, 1969, Ser. No. 838,000
Int. Cl. B60s *3/04*; B08b *3/02*
U.S. Cl. 134—58 R 10 Claims



Nozzles mounted on inclined pipes project narrow, concentrated streams of washing liquid against a car and the pipes are oscillated so that the streams wash inclined, overlapping swaths on the car. Two of the pipes are on the side and are drivingly interconnected by a top pipe. The operations of the sprays in a plurality of arches of the car wash are controlled by a coin actuated timer which also sequentially lights a series of electric lamps extending along one side of the car wash to pace a driver of a car through the car wash.

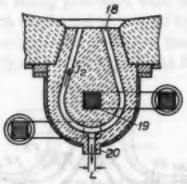
ERRATUM

For Class 137—81 see:
Patent No. 3,701,458

3,701,357
ELECTROMAGNETIC VALVE MEANS FOR TAPPING MOLTEN METAL

Staffan N. Granstrom, and Ingemar E. Goransson, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Sept. 23, 1969, Ser. No. 860,253
Claims priority, application Sweden, Sept. 30, 1968, 13158/68; June 16, 1969, 8512/69
Int. Cl. F15c *1/04*
U.S. Cl. 137—81.5 6 Claims

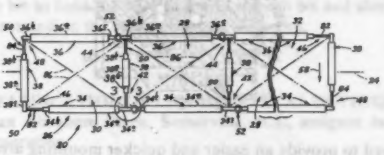


Valve means for ladles or furnaces, preferably of channel type, provided with at least one bottom tap hole. This means comprises a magnetic circuit with an "air gap" in the hole and with a flux direction straight across the flow direction in said hole. Current conductors are also arranged to conduct electric current straight across the stream, perpendicular to the flux, and a force is thus produced in the melt in the hole directed upwards or downwards and depending on the law of magnetic force. The invention also includes an embodiment with similar means in a channel type furnace, but used for circulating molten metal in the channels of the furnace.

3,701,358
ARTICULATED FRAME FOR MOBILE GROUND-TRAVELING INSTRUMENTALITY

Carl V. Von Linsowe, San Jose, Calif., assignor to John T. Page, Portland, Oreg., part interest to each

Filed June 22, 1970, Ser. No. 48,192
Int. Cl. B05b *9/02*; E01h *3/02*
U.S. Cl. 137—344 7 Claims

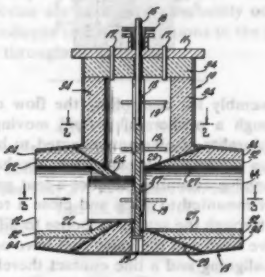


A mobile irrigator having an elongated articulated frame adapted to travel over the ground in a direction substantially normal to its longitudinal axis. Joints between different parts in the frame enable the latter to undulate while traveling over uneven terrain, while resisting horizontal bowing along its axis.

3,701,359
HIGH TEMPERATURE SLIDE VALVE

Arthur C. Worley, Mendham, and Ronald S. Kane, Saddle Brook, both of N.Y., assignors to Esso Research and Engineering Company

Filed Jan. 25, 1971, Ser. No. 109,122
Int. Cl. F16k *3/00*
U.S. Cl. 137—375 6 Claims



An internally insulated slide valve for throttling and blocking solids flow at high temperature and moderate pressure in fluid solids transfer lines. The metal body of the valve operates at lower temperatures than if it had no insulation. Internal parts of the valve are supported so that they do not transmit excessive heat through the supporting members to the body.

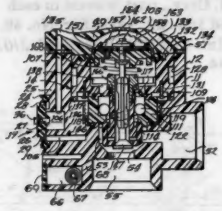
3,701,360
WATER SOFTENER VALVE

Edwin A. Morrison, Highland Park, Ill., assignor to Culligan International Company, Northbrook, Ill.

Filed June 3, 1971, Ser. No. 149,514
Int. Cl. F16k *31/18*
U.S. Cl. 137—454.6 4 Claims

An improved water softener control valve for use on an automatic water softening or conditioning tank where the valve housing is formed of a suitable plastic material positioned within a rigid mounting bracket secured to a water softening tank, and valve cartridges having a double diaphragm actuation are controlled by solenoid operated valves mounted on a plate secured to the valve housing. The valve cartridge has been improved by the elimination of the side drain opening

with bleed-off from the upper pressure chamber occurring through the upper diaphragm and an annular bottom seal for the valve cartridge, and the solenoid valve structure has been



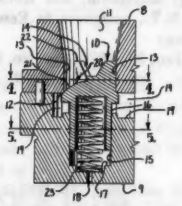
improved to provide an easier and quicker mounting arrangement of the solenoid valves on the valve plate secured to the control valve and mounting bracket.

3,701,361

VALVE ASSEMBLY AND VALVE MEMBER THEREFOR

Stuart E. Bunn, and Herbert B. Owsley, both of P.O. Box 388, Shawnee Mission, Kans.

Filed March 8, 1971, Ser. No. 121,934
Int. Cl. F16k *15/06*
U.S. Cl. 137—543.23 **3 Claims**



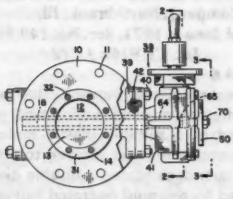
A valve assembly for controlling the flow of fluid under pressure through a portion of a fluid moving structure is formed of a plurality of elements adapted to be arranged to form either an intake or an exhaust or discharge valve assembly. Each valve assembly includes a seat and cage with a valve member mounted to open and close a respective fluid flow passage through the seat in response to differential pressure. The valve head and the valve seat have opposed curves to effect self-aligning and a line contact therebetween when the valve is seated in flow closing position. The seat and cage each have a guide bore for receiving respective portions of the valve member during opening and closing movement of the valve member.

3,701,362

POSITION INDICATING BUTTERFLY VALVE

Anthony L. Reese, Bradford, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed July 12, 1971, Ser. No. 161,805
Int. Cl. F16k *37/00, 17/14, 1/22*
U.S. Cl. 137—556.3 **8 Claims**



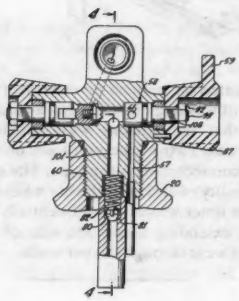
A butterfly valve construction having an outside indicator for indicating vane relation between open and closed positions of the valve. A single assembly mode between the vane, drive shaft and outside indicator assures accurate exterior indication of vane relation. Vane operating force is transmitted through a replaceable shear pin which, in event of operating interference, fractures to prevent damage to other valve components.

3,701,363

SCUBA VALVE

Manfred Schuler, 4100 Patrice Road, Newport Beach, Calif., and Tatsumi Yamamoto, 2231 Joana Dr., Apt. A, Santa Ana, Calif.

Filed Dec. 2, 1970, Ser. No. 94,307
Int. Cl. A62b *9/02*
U.S. Cl. 137—599 **5 Claims**



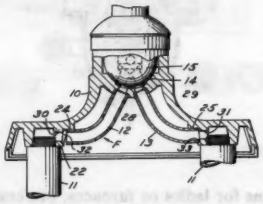
The reliability of a reserve air supply for underwater diving can be greatly improved by using a rotary valve arrangement for releasing air through a parallel passage. The actuation of such a valve can also be made independent of the mechanism which detects the condition that the supply of air remaining in the tank is low.

3,701,364

FAUCET BODY AND METHOD OF MANUFACTURE

Terence G. Hare, Union Lake, Mich., assignor to Miller Manufacturing Company, Southfield, Mich.

Continuation of Ser. No. 842,229, July 16, 1969, abandoned.
This application Jan. 4, 1971, Ser. No. 103,885
Int. Cl. F16k *11/10*
U.S. Cl. 137—625.41 **12 Claims**

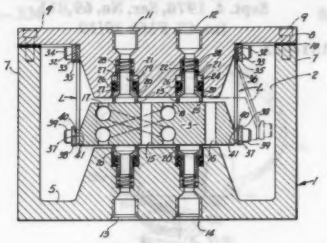


A faucet body comprising a brass casting having a valve seat and spaced annular walls. The valve seat has a pair of openings therein and the annular walls each have an opening therethrough. A conduit is positioned with one end adjacent one of the pair of openings and the other end adjacent an opening in the annular wall and a force is applied to the conduit to deform it into position after which the conduit is fixed to the faucet body.

3,701,365
SLIDE VALVE

Joseph T. Abdo, 25 Crest Rd. W., Rolling Hills, Calif.

Filed May 24, 1971, Ser. No. 146,049
Int. Cl. F16k *11/06*
U.S. Cl. 137—625.43 21 Claims

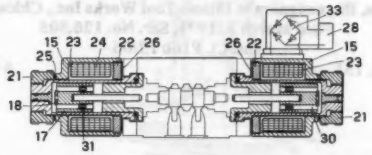


A slide valve in which the slide is supported in the valve chamber on links interengaged between the ends of the slide and the body, the body and slide having fluid passages, and the body passages having tubular seals having face-to-face sealing engagement with the slide. The slide is actuated by a lever extending through a wall of the body and engaged with the slide between its ends.

3,701,366
HYDRAULIC SOLENOID VALVE DIRECTLY OPERATED WITH ADJUSTABLE OVER-RIDE SPEED

Paolo Tirelli, Milan, and Elio Saporiti, Cusano Milanino, Milan, both of Italy, assignors to ATOS Apparecchiature Oleodinamiche S.r.l., Milan, Italy

Filed Aug. 14, 1970, Ser. No. 63,865
Int. Cl. F16k *31/06*
U.S. Cl. 137—625.65 10 Claims



A hydraulic valve is operated by an electromagnet which is enclosed in a tight chamber and actuates a core movable in a cylinder, said core being provided with longitudinal perforations through which the liquid governed by the valve passes as the core moves through said cylinder; the section of the perforation may be adjustable for regulating the speed of the core in the cylinder.

ERRATA

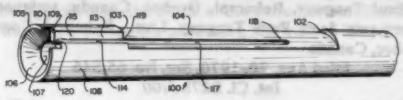
For Classes 137—599 and 137—625 see:
Patents Nos. 3,701,598 and 3,701,599

3,701,367
WIRE WRAP TOOL

Daniel Whitney Ackerman, Binghamton, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.

Filed Dec. 14, 1970, Ser. No. 97,704
Int. Cl. B21f *15/04*
U.S. Cl. 140—119 11 Claims

A wire wrapping tool having an elongated cylindrical bit with an aperture in the end thereof for receiving a terminal stud and a wrapping sleeve which telescopes on the bit to lock a length of wire thereon. A flange on the wrapping sleeve

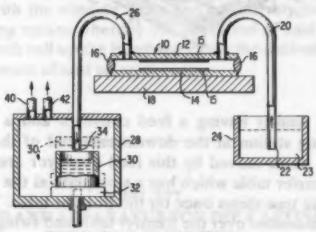


cooperates with a relieved and grooved surface and a wire slot on the bit to hold the wire properly as both bit and sleeve are being rotated on the stud to effect a wirewrap.

3,701,368
FABRICATION OF LIQUID CRYSTAL DEVICES

Herman Abraham Stern, Somerville, N.J., assignor to RCA Corporation

Filed June 23, 1971, Ser. No. 155,845
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—1 5 Claims

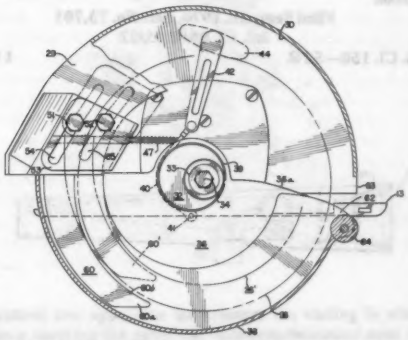


During device filling, as by flowing the liquid crystal material through ports opening into opposite ends of the device, the walls of the device are caused to alternately outwardly bow and inwardly collapse to cause variations in the paths of flow of the material through the device.

3,701,369
CIRCULAR SAW

Ronald E. Gronke, Des Plaines, and William H. Schultz, Northbrook, both of Ill., assignors to Skil Corporation

Filed July 27, 1970, Ser. No. 58,530
Int. Cl. B27b *9/00*
U.S. Cl. 143—43 C 12 Claims

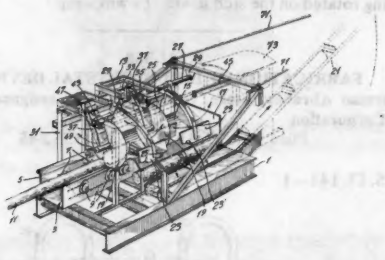


The circular saw includes a movable blade guard mounted for rotation about an axis offset from the axis of rotation of the circular blade, such guard enclosing a kerf guide and the teeth on the lower portion of the blade. The movable blade guard is retracted by a manually operable lever mounted on the side of the fixed blade guard adjacent the motor housing. The kerf guide is adjustably mounted so as to be rocked in its own plane thereby to cooperate with circular blades of different diameters.

3,701,370
MULTIPLE SAW TREE SLASHER

Jean Paul Tanguay, Roberval, Quebec, Canada, assignor to Placements Jean Paul Tanguay Ltee,, Roberval County, Quebec, Canada

Filed Aug. 20, 1970, Ser. No. 65,546
Int. Cl. B27b 5/00
U.S. Cl. 143—46 5 Claims

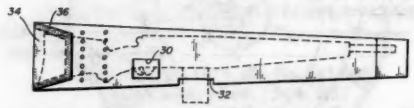


A tree slasher having a feed conveyor and a sawing and discharging station at the downstream end of the conveyor. The tree stems moved by this feed conveyor are discharged into a transfer table which has a stop plate at the end thereof to stop the tree stems once on the transfer table. Two spaced saws are mounted over the transfer table and swing from an inoperative retracted position to an operative position to saw the tree stems. The saws are spaced from one another and from the stop plate distances that correspond to the length of logs required. A discharge conveyor is provided alongside the transfer table to displace the logs in the same direction and load them into a waiting vehicle. Sweeping blades displaceable across the transfer table move the logs into the discharge conveyor.

3,701,371
RAIN GUN CASE

Robert H. Stackhouse, 3970 East Frank Phillips, Bartlesville, Okla.

Filed Sept. 21, 1970, Ser. No. 73,701
Int. Cl. B65d 65/02
U.S. Cl. 150—52 R 1 Claim

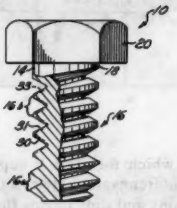


A gun case is made of light, flexible material, and is capable of being rolled or folded to fit into a pocket holder for storage and carrying. The gun case is designed to be folded into a packet small enough to be carried in a person's shirt pocket. In one embodiment the gun case is rolled or folded into a pocket holder formed as an integral part of the gun case at one end thereof. The gun case may have openings formed therein by which a person may operate the trigger while the gun is in the case, or by which a person may insert a cartridge clip, or it may include other openings for ejection of spent cartridges.

3,701,372
LOCK BOLT AND METHOD OF MAKING THE SAME

Arthur R. Breed, Euclid, Ohio, assignor to The Lamson & Sessions Co., Cleveland, Ohio

Continuation of Ser. No. 716,219, March 26, 1968, abandoned, which is a continuation-in-part of Ser. No. 629,133, April 7, 1967, Pat. No. 3,526,914. This application Sept. 4, 1970, Ser. No. 69,811
Int. Cl. F16b 39/30
U.S. Cl. 151—22 8 Claims

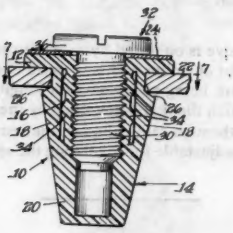


An external locking thread convolution is provided which deviates from a standard Class 5 interference-fit thread in that the space provided at the root of the thread form between adjacent locking threads is greater than the maximum space provided at this location for the standard class 5 thread. Also, an externally threaded locking fastener having such a locking thread convolution and a method for making such a locking fastener by a thread rolling operation is provided.

3,701,373
GROMMET TYPE FASTENER

Louis J. Wronke, Hillpoint, Wis., and John A. Pestka, Park Ridge, Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed March 3, 1971, Ser. No. 120,505
Int. Cl. F16b 13/06
U.S. Cl. 151—41.75 6 Claims

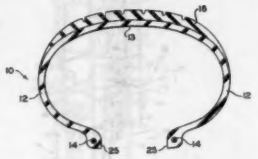


The present invention relates generally to improvements in plastic fasteners and more particularly to the provision of a unique and improved one-piece plastic grommet type anchor member for accommodating the threaded shank of a screw member when positioned within a work aperture. The anchor member disclosed herein includes a head section for clampingly engaging one side of an apertured workpiece, and a shank section comprising an elongate hollow portion for accommodating a screw shank, and diametrically disposed peripherally positioned shank arms integrally connected with and extending axially between underside of the head section and the entering extremity of said hollow portion.

3,701,374
ELASTOMERIC ARTICLES FREE FROM REINFORCING ELEMENTS

Daniel R. McGillvary, Massillon, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed July 6, 1970, Ser. No. 52,150
Int. Cl. C08g *22/04*; B60c *5/00*
U.S. Cl. 152—330 8 Claims

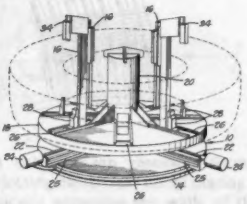


Pneumatic tires and other elastomeric articles subject to tensile stress and dynamic flexure in service, said articles having no reinforcing elements, or having reinforcing elements in portions only thereof, are made from elastomers having, in the cured state, a molecular weight between covalent cross-links of 5,100 – 40,000, and a molecular weight between electrostatic cross-links of 800 – 5,000. Such articles exhibit excellent strength, elasticity, tear resistance, flat-spotting properties and overall performance in service, both at ambient and elevated temperatures.

3,701,375
DEVICE FOR DEMOUNTING TIRES

Richard E. Dixson, 81635 Shadow Drive, and Linus R. Merrill, both of Indio, Calif.

Filed Oct. 14, 1970, Ser. No. 65,605
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.33 6 Claims



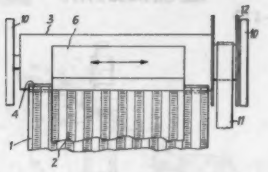
A device for removing heavy duty tires from their wheel assemblies which employs a base, vertical press members mounted thereon and a movable platform which operates to force the rim of the wheel upwardly of the flange thereby reducing the pressure on the wheel assembly, and a lifting assembly for removing the annular bead seat band from the wheel assembly thereby rendering the tire and wheel assembly in condition for easy demounting.

3,701,376
DEVICE FOR SLIDE-SHIFTING AND WINDING TWIN VERTICAL SCREENS OR BLADES

Pierre Froget, Nemours, France, assignor to "Griesser", Alpes Maritimes, France

Filed Dec. 23, 1969, Ser. No. 887,579
Claims priority, application France, Dec. 30, 1968, 68182061
Int. Cl. E06b *9/08*
U.S. Cl. 160—121 5 Claims

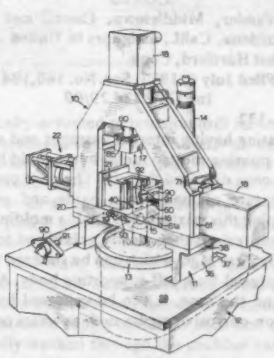
In a blind comprising a pair of vertical screens adapted to be rolled up or down on or from a winding drum, said screens consisting either of continuous sheets or of parallel blades adapted to be oriented to permit of controlling the ingress of air and light through the blind, in the closed or unrolled condition thereof, a device for producing the mutual lateral movement of said screens, this device comprising suspension means associated with the winding drum and operatively connected to the winding means whereby the operation of said winding means will both roll up the blind and cause the desired relative lateral movement of said screens.



3,701,377
METHOD AND APPARATUS FOR DIE CASTING BY PRESSURE INJECTION

William Frederick Fisher, Peterborough, Ontario, Canada, assignor to Fisher Gauge Limited, Peterborough, Ontario, Canada

Filed Sept. 29, 1970, Ser. No. 76,483
Claims priority, application Great Britain, Oct. 10, 1969, 50,011/69
Int. Cl. B22d *27/14*, *33/04*
U.S. Cl. 164—113 22 Claims



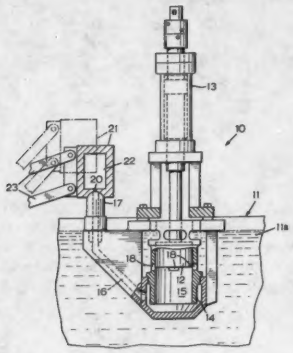
A method and apparatus for pressure die casting in which the frame carrying the gated die is counterbalanced over the injection nozzle for movement between a lowered seated position and a raised unseated position, and floated initially to seat the gate on the nozzle. Certain of the interfitting die parts are moved and releasably locked by applying, by pivotal leverage through the die frame, a force acting in the direction of closing movement of the die, preferably by wedge means acting parallel to that direction. The sprue in the die is sheared by moving the gated die part laterally, and a subsequent lateral movement of the gated die part may introduce pressurized fluid into the die cavity to blow the sprue from the gate.

3,701,378

METHOD OF INJECTION DIE CASTING

Eric Purdy Graham, Peterborough, Ontario, Canada, assignor to Fisher Gauge Limited, Peterborough, Ontario, Canada

Filed Sept. 29, 1970, Ser. No. 76,558
Claims priority, application Great Britain, Oct. 10, 1969, 50,012/69
Int. Cl. B22d 27/10
U.S. Cl. 164—113 2 Claims



A method of injecting molten metal into a die cavity in a pressure die casting operation using a die which removably seats on a nozzle fed from an injection pump having a reciprocable plunger movable to cover entry ports in the pump chamber. After the plunger is advanced to close the ports and fill the die cavity, the plunger is locked and pressure by the plunger is maintained for a predetermined time, after which the pressure is released, followed after a further predetermined time by a short retraction and re-locking of the plunger while the die is being retracted from the nozzle.

3,701,379

PROCESS OF CASTING UTILIZING MAGNESIUM OXIDE CORES

Michael H. Fassler, Middletown, Conn., and Norman E. Brinker, Gardena, Calif., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed July 6, 1971, Ser. No. 160,184
Int. Cl. B22d 29/00
U.S. Cl. 164—132 9 Claims

A metal casting having internal passages and apertures can be formed by pouring molten metal into a mold having a magnesium oxide core disposed therein. The core can be made by forming a mixture of magnesium oxide and an evanescent resin and shaping this mixture by suitable molding techniques. The evanescent resin is then slowly volatilized to leave a core of substantially pure MgO which can be sintered to form a carbonaceous material-free, self-supporting body. After a casting is made around the core, it can be removed by washing the casting in a non-corrosive media such as water or dilute acetic acid.

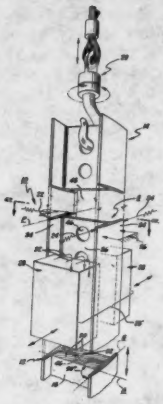
3,701,380

CLADDING MOLD SYSTEM

Robert K. Richter, Walnut Creek, and Jurek Shkredka, Oakland, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Dec. 1, 1969, Ser. No. 881,169
Int. Cl. B22d 17/24, 19/00
U.S. Cl. 164—334 7 Claims

Improved cladding mold system for use in cladding an elongated metallic rail element and the like wherein special floating guide elements are employed to guide the rail element into, through and then out of the cladding zone as successive portions of the r..l element are first passed through the



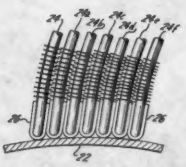
cladding zone and upon completion of the cladding operation are then withdrawn from the cladding zone by means of a common hoist device.

3,701,381

HEAT EXCHANGER SUPPORTING MEANS

Hargus Watts, Hawthorne, N.J., assignor to Curtiss-Wright Corporation

Filed July 21, 1971, Ser. No. 164,556
Int. Cl. F28f 13/00
U.S. Cl. 165—82 5 Claims



A heat exchanger comprising serpentine finned tubes disposed in an annular configuration, with means for positioning and supporting the unfinned return bends of the tubes in such a manner as to prevent coolant fluid from bypassing the finned portions, and to allow movement of the tubing in thermal expansion.

3,701,382

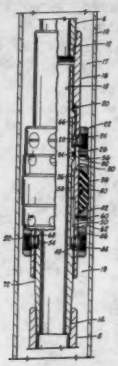
WELL PACKER APPARATUS

Robert C. Williams, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed June 2, 1971, Ser. No. 149,278
Int. Cl. E21b 33/12
U.S. Cl. 166—183 15 Claims

A packer is provided, one or more of which may be used to seal between a well casing and a tubing string placed inside the well casing. The well packer is provided with a bypass valve to permit flow of fluid through the packer inside the packing element to facilitate lowering the packer into the well and to facilitate lifting the packer out of the well. The pipe below the packer must be anchored to withstand upstrain exerted in tubing above the packer to cause setting of the packer, closing of the bypass valve and holding force to hold the packer in position in the casing after setting. The packer may be held in a

retracted position, while lowering into the well, by screws or pins which shear when the setting upstrain is applied to the



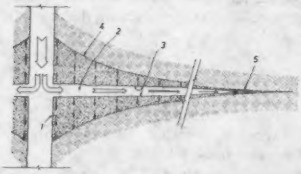
packer. A latch is provided to lock the packer in retracted position to hold the bypass valve open while the packer is being lifted from the well.

3,701,383

FRACTURE PROPPING

Edwin A. Richardson, Houston, Tex., and Herbert W. Barnes, New Orleans, La., assignors to Shell Oil Company, New York, N.Y.

Filed Jan. 7, 1971, Ser. No. 104,689
Int. Cl. E21b *33/138*, *43/26*
U.S. Cl. 166—280 **5 Claims**



Fractures within subterranean reservoir formations are propped open by injecting electroless metal plating solution at a rate that hydraulically separates the walls of the fracture while fluid is leaking into the fracture walls and, after the walls have been converted to structures which are integral and porous, disposing a fracture propping material between the fracture walls.

3,701,384

METHOD AND COMPOSITION FOR CONTROLLING FLOW THROUGH SUBTERRANEAN FORMATIONS

Willis G. Routson, Walnut Creek, Calif., and Albert L. Caldwell, Houston, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed March 11, 1971, Ser. No. 123,387
Int. Cl. E02d *3/14*; E21b *33/138*, *43/22*
U.S. Cl. 166—292 **6 Claims**

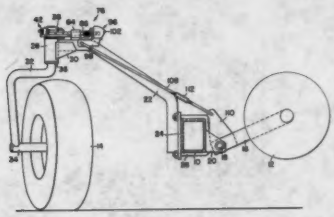
A slurry of finely divided inorganic solids, such as silica flour, magnesium oxide, or magnesium or calcium carbonates, silicates or hydroxides, is injected into a porous subterranean formation together with an aqueous composition consisting of a colloidal dispersion of a water-insoluble, inorganic compound formed in an aqueous solution of a high-molecular-weight organic polymeric polyelectrolyte to accomplish plugging of thief zones, fractures or other zones of excessive permeability.

3,701,385

LAND WHEEL CONTROL MEANS

Robert Lee Patterson, Fonthill, Ontario, and Mario Ventresca, Welland, Ontario, both of Canada, assignors to Deere & Company, Moline, Ill.

Filed July 14, 1971, Ser. No. 162,428
Int. Cl. A01b *15/14*
U.S. Cl. 172—386 **9 Claims**



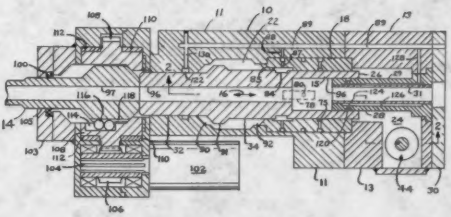
Apparatus for automatically locking the land wheel of a disk tiller in a preselected transport position in response to movement of the ground-working disks thereon out of engagement with the ground.

3,701,386

HYDRAULIC DRIFTER

Jacob E. Feucht, Sidney, Ohio, assignor to Dresser Industries, Inc.

Filed Dec. 11, 1970, Ser. No. 97,164
Int. Cl. B25d *9/00*, *17/14*
U.S. Cl. 173—78 **8 Claims**



A hydraulically-actuated percussion drill having a hydraulic control valve arranged so that hole-cleaner air can be directed through an axial passage in the piston without interference from the hydraulic valve; the piston is annular so that its central bore acts as an air passage. Oil drainage grooves are provided at the piston-housing joints where high pressure oil might otherwise tend to escape into the air passage; air pressure is used to retard leakage of oil past the grooves. Preferably the piston is built to include a cushioner flange which moves into hydraulic snubber cavities to decelerate the piston. The hydraulic supply system is such that high pressure oil is continually washed through the snubber cavities to take away heat developed by the snubbing actions.

3,701,387

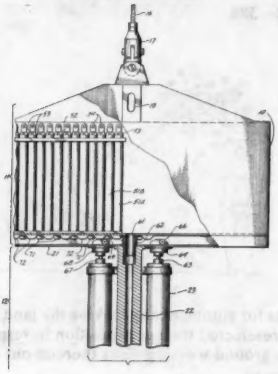
CORE SAMPLING APPARATUS

Nicholas L. Koot, Lafayette, La., assignor to Global Marine Inc., Los Angeles, Calif.

Filed Nov. 4, 1970, Ser. No. 86,650
Int. Cl. F21b *7/12*
U.S. Cl. 175—6 **15 Claims**

Apparatus for taking a plurality of sequential punch core samples in underwater sediments is provided. Core sampling tubes are driven into the sediments by hydraulic pressure acting through a central guide tube. The core sampling tube is withdrawn by hydraulic pressure applied through an annular

space between the guide tube and a surrounding pipe. The hydraulic pressures are applied by a pair of hydraulic pumps using sea water as the fluid. A plurality of core sampling tubes are contained in a magazine and are fed to the guide tube one at a time for taking samples. The filled core tubes are returned



to the magazine where they are retained and stored. First and second sets of drive cams on the magazine are operated alternately by reverse operation of the hydraulic pumps so that the containers in the magazine controllably advance only one container width at a time.

3,701,388

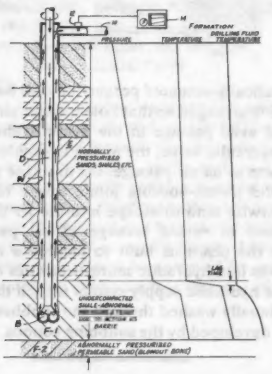
DRILLING METHOD

Jasper N. Warren, 6102 Yarwell, Houston, Tex.

Filed Feb. 11, 1970, Ser. No. 10,376

Int. Cl. E21b *47/06*

U.S. Cl. 175—50 **5 Claims**



A drilling method which includes the usual steps of rotating a drill string and circulating a drilling fluid together with the steps of detecting an increase in the rate of increase of temperature of the drilling fluid and taking appropriate steps responsive to such increase in rate such as increasing the weight of drilling fluid, setting casing to allow drilling fluid weight to be increased, to prepare for a high pressure formation being approached by the drill bit or stopping the drilling to avoid drilling into the high pressure formation.

3,701,389

WIRE LINE CORE DRILLING APPARATUS

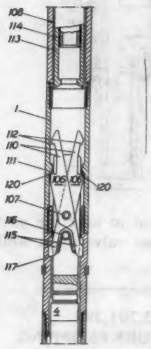
Gunnar Kristoffer Egnelov, and Sune Vilhelm Eriksson, both of Sundbyberg, Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed April 23, 1971, Ser. No. 136,804

Claims priority, application Sweden, March 30, 1970, 6007/70

Int. Cl. E21b *25/00*

U.S. Cl. 175—246 **8 Claims**



A wire line core drilling apparatus comprising a tubular drill stem, an annular drill bit mounted at the forward end of the drill stem and an inner core tube assembly, the latter of which is provided with at least one latch dog for being lockable against longitudinal displacement relative to the drill stem and for being connectable to a retrieving device introduced in the drill stem.

3,701,390

SAMPLE SCALE

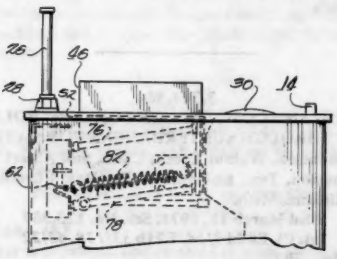
George H. Fathauer, Decatur, Ill., assignor to Overton Corporation, Countryside, Ill.

Continuation of Ser. No. 43,770, June 5, 1970, abandoned.

This application Nov. 16, 1971, Ser. No. 199,325

Int. Cl. G01g *13/18, 13/34, 3/04*

U.S. Cl. 177—113 **14 Claims**

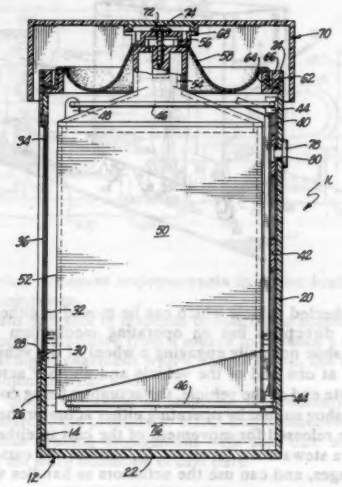


Spring operated sample scales for use in grain moisture testers to measure a fixed weight of the material under test and including a hopper mounted on four parallel bars for parallel vertical movement with respect to the remainder of the tester, the hopper having automatically actuated doors on the lower wall thereof, are disclosed.

3,701,391
BUOYANCY TYPE WEIGHING SCALE

Erland G. Paulson, Huntington Beach, and Charles G. Mandala, Palos Verdes Peninsula, both of Calif., assignors to Eldon Industries, Inc., Hawthorne, Calif.

Filed Oct. 21, 1971, Ser. No. 191,525
Int. Cl. G01g 5/02
U.S. Cl. 177—207 12 Claims

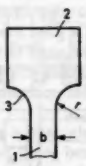


A weighing device for weighing items through the use of Archimedes' principal can be constructed utilizing a float suspended or supported by a liquid within a housing. To prevent the loss of liquid the interior of the housing above the liquid is sealed off by a flexible diaphragm extending between the float and the housing. To insure accurate weighing, means are provided for controlling the pressure in the housing above the liquid and for adjusting a means for determining the depth of the float within the housing so that the level of the liquid will be a true indication of the weight of an item being weighed.

3,701,392
FLAT VIBRATING MEASURING STRING

Walter Wirth, Uitikon, Zurich, Switzerland, and Burkhart Kuhl, Karlsruhe, Germany, assignors to August Sauter KG, Ebingen, Germany

Filed Dec. 17, 1970, Ser. No. 99,211
Claims priority, application Germany, Dec. 17, 1969, P 19 63 303.5
Int. Cl. G01g 3/14
U.S. Cl. 177—210 13 Claims

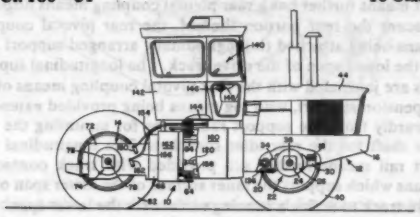


A flat vibrating measuring string or ribbon suitable for use with a vibrating string weighing apparatus. The cross-section of the string is selected with such a large ratio of the largest to the smallest cross-sectional axis that the resonant frequencies of the desired mth vibrating mode in the direction of the minimum bending rigidity are situated below the resonant frequencies of the first mode in the transverse direction. The string is also enlarged at its ends, preferably by means of interconnecting rounded portions, to minimize the peak stress where the string is clamped. To further minimize the tension at the ends of the string where they are clamped, the string is secured to a junction mass having a resistance and modulus of elasticity which is within an order to magnitude of that of the string.

3,701,393
ARTICULATED TRACTOR

David Forrest Lemons, Cedar Falls; Gordon Le Roy Marquart, Jessup, and Saul Herscovici, Waterloo, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Oct. 30, 1970, Ser. No. 85,460
Int. Cl. B60k 17/34
U.S. Cl. 180—51 10 Claims

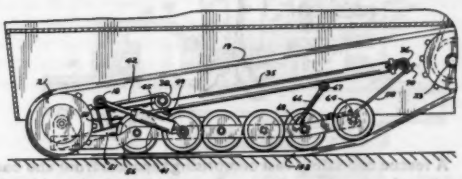


An articulated four-wheel drive tractor has front and rear frame structures joined by a vertical pivot. The front frame structure is supported on an oscillating front drive axle assembly and the rear frame structure is rigid with the rear drive axle assembly, which is directly connected to a change-speed transmission also on the rear frame structure. The transmission is driven by an engine on the front frame structure through an upper drive shaft, which crosses the axis of articulation at engine output speed and drives a gear train on the rear frame structure forwardly of the transmission. A second drive shaft extends forwardly from the transmission across the axis of articulation below the upper drive shaft and is connected at its forward end to the front drive axle assembly, the lower drive shaft like the upper drive shaft including a pair of universal joints equally distant to the front and to the rear of the pivot axis. An operator's station is mounted on the front frame structure above the pivots between the frame structures and the transmission is controlled from the operator's station through flexible cables.

3,701,394
DRIVE MEANS FOR SNOWMOBILE DEVICES

George Vernon Hendrickson, Twin Valley, Minn., assignor to Viking Snowmobiles, Inc., Twin Valley, Minn.

Filed July 23, 1971, Ser. No. 165,451
Int. Cl. B62m 27/02; B62d 55/10
U.S. Cl. 180—5 R 14 Claims



A drive and suspension assembly for snowmobiles or similar vehicles having endless track propulsion means, wherein the angular disposition of the base of the track is responsive to increases in torque being applied to the drive sprockets. The snowmobile vehicles are provided with conventional frames

with forward and rear mounts for attaching the drive and suspension assembly to the frame, and means are provided on the drive and suspension assembly for receiving a drive track. Forward drive sprocket means are provided for delivering power to the track and rear idler sprockets are provided to support the track and define upper and lower spans in the track. The drive and suspension assembly comprises an elongated generally longitudinally disposed suspension support means having a forward end portion journaled to the forward frame mount and being adapted for pivotal motion thereabout. A rearwardly disposed mounting means is provided including a generally transversely disposed mounting shaft having stabilizing means resiliently coupling the rear mounting shaft to the rear frame mount, with the stabilizer means normally urging the suspension support means away from the rear frame mount. The stabilizer means normally include shock absorbers and coil springs. The suspension support means further has a rear pivotal coupling means disposed adjacent the rear portion thereof, the rear pivotal coupling means being attached to longitudinally arranged support rails for the lower span of the drive track. The longitudinal support rails are journaled with the rear pivotal coupling means of the suspension support, with lug means being provided extending upwardly from the support rail means for mounting the rear axle shaft for the rear idler sprockets. The longitudinal support rail means further are provided with track contacting means which support the inner surface of the lower span of the drive track to define a running surface for the lower span.

3,701,395

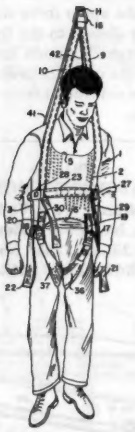
RESCUE AND SAFETY VEST

Stuart J. Theobald, 3206 Paul Drive, Wheaton, Md.

Filed May 14, 1971, Ser. No. 143,560

Int. Cl. A62b *35/00*

U.S. Cl. 182—3 **15 Claims**



A rescue and safety vest comprising separate front and back portions having means thereon for quickly and releasably joining the front and back portions together about the torso of a person. Both the front and back portions include enlarged vest portions which provide support and evenly distribute pressure over the torso of the person, and one of the portions includes relatively wide leg straps which encircle the legs of the person and provide lifting support therefor.

3,701,396

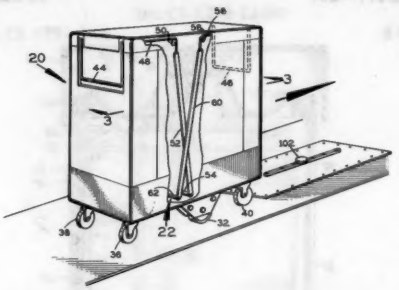
OPERATING APPARATUS FOR CART

Bruce F. House, Miami, Fla., assignor to Shelley Manufacturing Company, Miami, Fla.

Filed Feb. 16, 1971, Ser. No. 115,313

Int. Cl. B60t *1/02, 1/14*

U.S. Cl. 188—21 **10 Claims**



A wheeled vehicle which can be moved in either of two opposite directions has an operating mechanism including a brake shoe normally engaging a wheel of the vehicle, one actuator at one end of the vehicle and another actuator at the opposite end of the vehicle, the actuators being coupled to the brake shoe so that by operating either actuator the brake shoe can be released for movement of the cart in either direction. Thus, a stewardess, for example, can use the cart to dispense beverages, and can use the actuators as handles whereby she can push the cart from either end and at the same time release the brake. The operating apparatus also preferably includes an anchoring means for engaging a floor mounted stud to moor the vehicle, the anchoring means including two spaced members adapted to capture the stud between them and each movable by operation of one of the actuators. Thus, when the stewardess releases the brake, she also releases an anchoring member so that the cart can be moved away from the stationary stud. The linkage or coupling between the actuators and the brake shoes includes a sliding connector which provides for simultaneous operation of two brakes.

3,701,397

ROLL DAMPENING

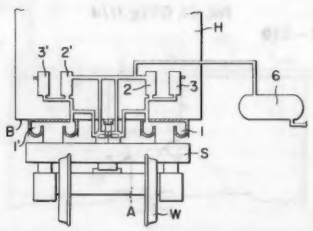
Yasuhior Shirane, Nishinomiya, and Junzo Yamada, Osaka, both of Japan, assignors to Sumitono Metal Industries Limited, Osaka, Japan

Filed Oct. 16, 1970, Ser. No. 81,322

Claims priority, application Japan, Oct. 18, 1969, 44/83516

Int. Cl. B61h *9/04, 11/00, 13/00*

U.S. Cl. 188—33 **3 Claims**

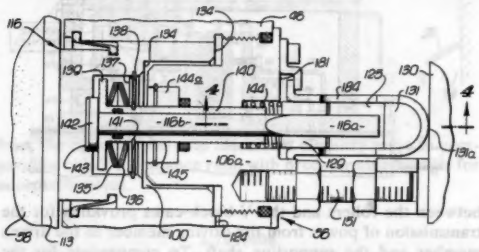


This invention relates to a car body roll controlling method wherein a car body roll is controlled by using a plurality of rows and steps of supply and exhaust valve means and any number of rows and steps of supply and exhaust valve means can be operated in response to the magnitude of the lateral acceleration acting parallel with the car body floor so that a proper control may be always made without causing hunting or the like.

3,701,398
FLUID AND MECHANICALLY ACTUATED DISC BRAKE SYSTEM

Samuel J. Martins, Reseda, Calif., assignor to Airheat Products, Inc., Van Nuys, Calif.

Filed Oct. 15, 1970, Ser. No. 80,979
Int. Cl. F16d 65/52
U.S. Cl. 188—71.8 10 Claims



The invention concerns improvements in a disc brake assembly that comprises:

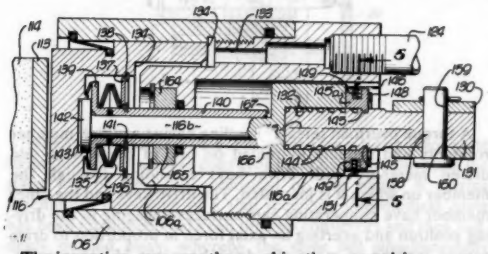
a. first means operable in response to controlled application of fluid pressure transmitted from a source to advance a brake part into braking engagement with a rotating disc, the brake part being subject to wear, and

b. second means operable in response to predetermined decrease in source fluid pressure to effect displacement of said brake part into braking engagement with said disc and irrespective of the worn condition of said part.

3,701,399
RESETTABLE, FAIL-SAFE DISC BRAKE SYSTEM

Franklin B. Airheart, Granada Hills, Calif., assignor to Airheat Products, Inc., Van Nuys, Calif.

Filed Oct. 21, 1970, Ser. No. 82,761
Int. Cl. F16d 65/52
U.S. Cl. 188—71.8 15 Claims



The invention concerns the combination comprising:

(a) a plunger and cylinder assembly, the plunger being responsive to fluid pressure application to advance relative to the cylinder to transmit actuating force for displacing a brake part into braking engagement with a relatively rotating disc, the brake part being subject to wear, and

(b) auxiliary means to mechanically advance the plunger relative to the cylinder to displace said part into braking engagement with the disc,

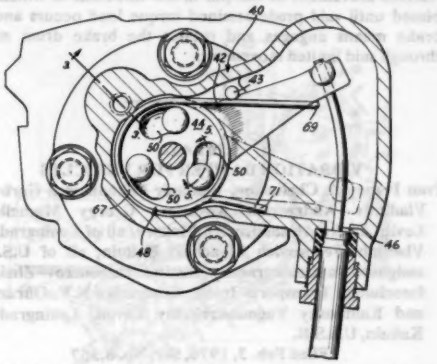
(c) said means including a ram element operatively connected with the plunger and there being interengagable load transmitting shoulders carried by said element and plunger located for relative shifting in one direction in response to predetermined plunger advancement relative to said means thereby to block retraction of the plunger relative to said means so as to compensate for brake part wear,

(d) said shoulders being interrupted to be disengageable in response to relative rotation of said element and plunger to permit relative shifting of the shoulders in the opposite direction for re-setting of the element relative to the plunger.

3,701,400
PARKING ACTUATOR FOR DISC BRAKE

Richard T. Burnett, and James J. Colpaert, both of South Bend, Ind., assignors to Bendix Corporation

Filed Jan. 20, 1971, Ser. No. 107,967
Int. Cl. F16d 55/00
U.S. Cl. 188—72.6 5 Claims

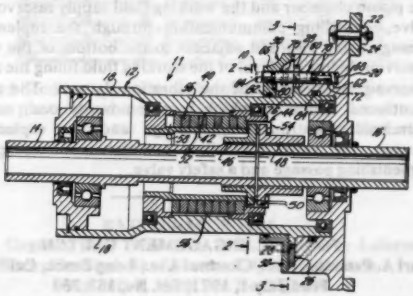


A disc brake includes a rotor mounted for rotation with a member to be braked and a caliper slidably mounted on a fixed torque member. The caliper includes a housing defining a bore therewithin, and a piston is slidably mounted in the bore to urge friction elements disposed on opposite sides of the rotor into braking engagement with the latter when pressurized fluid is admitted into the bore during a brake application. A parking actuator is provided which includes a lever mounted within the caliper housing for rotation about an axis extending generally parallel to the axis of the rotor and for movement relative to the caliper along this axis. An elongated member interconnects the lever with the piston. Force transmitting elements are disposed between the lever and the end of the housing, so that when the lever is rotated, the force transmitting elements urge the latter toward the rotor. This axial movement is transmitted to the piston by the elongated member, to urge the piston toward the rotor, effecting a brake application.

3,701,401
TORQUE OVERLOAD SENSING AND INDICATING DEVICE FOR TORQUE LIMITING BRAKE MECHANISM

Michael A. Palma, Parsippany, and Joseph W. Minarick, Oakland, both of N.J., assignors to Curtiss-Wright Corporation

Filed May 12, 1971, Ser. No. 142,569
Int. Cl. B60t 7/12; F16d 66/00
U.S. Cl. 188—134 16 Claims



A torque overload sensing and indicating device for a torque limiting brake mechanism having a torque limiting and

brake means coacting with brake drum means which is connected for limited rotative movement relative to a stationary support to interrupt and arrest transmission of rotation upon a predetermined torque load, the sensing and indicating device comprising at least one spring biased bin axially slidably disposed in the stationary support and a stop member carried by the brake drum means and disposed to abut the pin to restrain movement of the pin in the direction in which it is biased until said predetermined torque load occurs and the brake means engages and rotates the brake drum means through said limited movement.

3,701,402

VIBRATION DAMPER FOR VEHICLES

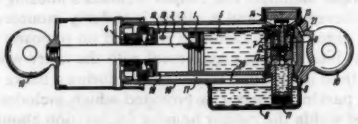
Ivan Ivanovich Chelnokov, Vladimir Mikhailovich Garbuzov, Vladimir Andreevich Koshelev; Georgy Mikhailovich Levit; Albert Alexandrovich Maltsev, all of Leningrad, and Vladimir Fedorovich Myachev, Kalinin, all of U.S.S.R., assignors to Leningradsky Institut Inzhenerov Zheleznofarozhnogo Transporta Imeni Akademika N.V. Obraztsova and Kalininsky Vagonostroitelny Zavod, Leningrad and Kalinin, U.S.S.R.

Filed Feb. 3, 1970, Ser. No. 8,357

Claims priority, application U.S.S.R., Feb. 7, 1969, 1309391

Int. Cl. F16f 9/34

U.S. Cl. 188—314 **4 Claims**



A vibration damper for vehicles, particularly, for railway vehicles is disclosed, which comprises a single-acting working cylinder cooperating with a piston carried by a piston rod, this working cylinder forming thereinside a working or piston chamber communicating with a working fluid supply reservoir, the latter being disposed below or at a lower level than the closure seal through which the piston rod extends. Disposed adjacent to the bottom of this supply reservoir is a valve controlling communication through a working fluid replenishing passage, this valve being mounted in a structure having a space thereinside, adapted to establish a hydraulic seal therein; this space communicates, on the one hand, through a throttling passage with the piston chamber of the working cylinder, and, on the other hand, with the supply reservoir through the working fluid replenishing passage. Moreover, with the working cylinder of the vibration damper disposed horizontally, the throttling passage is adapted to establish fluid communication between the upper extremity of the piston chamber and the working fluid supply reservoir; the valve controlling communication through the replenishing passage being disposed adjacent to the bottom of the supply reservoir, below the level of the working fluid filling the supply reservoir in operation of the vibration damper. The above-mentioned structure, which is a removable one, receives thereinside the throttling passage and the replenishing passage, the valve controlling communication trough the replenishing passage and a safety valve.

3,701,403

POSITIVE ENGAGEMENT CLUTCH

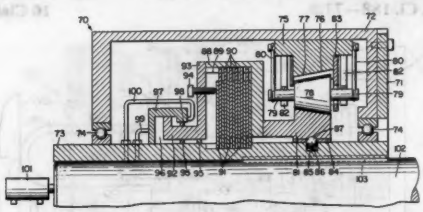
Earl A. Peterson, 4111 Chestnut Ave., Long Beach, Calif.

Filed July 1, 1971, Ser. No. 158,703

Int. Cl. F16d 43/21, 11/06, 13/14

U.S. Cl. 192—38 **28 Claims**

A clutch for providing positive engagement between a driving and driven member. A driving member having tapered V-block cams and aligned tapered rollers in registration therewith are suitably journeled about a hub having a slidably engaged wedge ring adapted to be received by the tapered rollers. Irrespective of whether or not the driving member is in a dynamic or static position, axial movement of the wedge ring against the supported rollers establishes positive engagement



between the rollers and the V-block cams providing for the transmission of power from the driving member to the driven member and the supporting shaft. To compensate for the shock inherent in the positive engagement of moving loads or where high inertia loads are moved from zero velocity, shock absorbing members are disposed immediate the wedge ring and supporting hub.

3,701,404

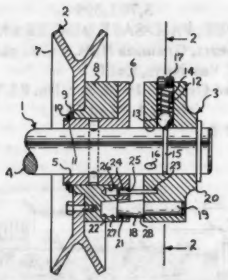
TORQUE OVERLOAD RELEASE COUPLING

Perry E. Cassell, 132 Shipmans Eddy, Warren, Pa.

Filed March 31, 1971, Ser. No. 129,752

Int. Cl. F16d 43/20

U.S. Cl. 192—56 R **7 Claims**



A torque overload release coupling having a clutch member rotatably and slidably journaled on one of the driving and driven members with drive keys extending through the member on which it is journaled. The drive keys and the other member have cooperating cam surfaces engaging in the driving position and exerting an axial force in proportion to drive torque tending to move the drive keys out of engagement. Snap action detents hold the clutch member in the driving and released positions.

ERRATUM

For Class 194—74 see:
Patent No. 3,701,600

3,701,405

COIN SELECTOR UTILIZING A COIN IMPELLER

Guy L. Fougere, Sand Pond Road, Lincoln, Mass.

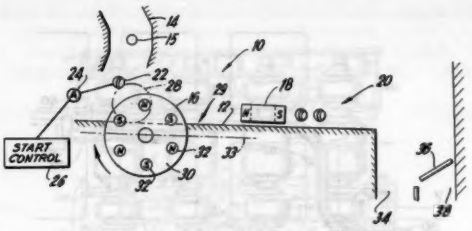
Continuation-in-part of Ser. No. 858,351, Sept. 16, 1969, abandoned. This application March 3, 1971, Ser. No. 120,652

Int. Cl. G07f 3/02

U.S. Cl. 194—101 **40 Claims**

A coin selector which utilizes a coin impeller is disclosed,

the impeller comprising magnetic field means for accelerating the coin. Coin velocity sensing means located downstream



from the coin impeller and associated circuitry serve to compare the coin's acceptance ratio with predetermined values for acceptable coins.

3,701,406

STORING MECHANISM FOR USE IN TRANSFERRING OBJECTS FROM ONE CONVEYOR TO ANOTHER

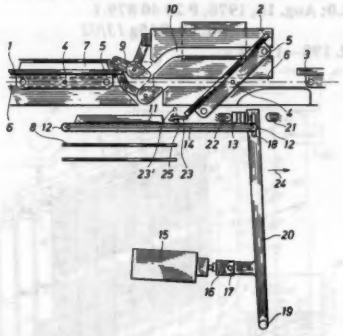
Kai Christian Sophus Aasted, Skovgardsvej 41, 2920 Charlottenlund, Denmark

Filed Jan. 26, 1971, Ser. No. 109,914

Claims priority, application Denmark, Jan. 30, 1970, 454/70

Int. Cl. B65g *47/00, 37/00*

U.S. Cl. 198—20 **5 Claims**



When chocolate slabs are transferred from a conveyor plate to an inferior transverse conveyor band by tilting the plate the slabs will be unevenly deposited on the band. A storing mechanism consisting of a slab receiving intermediate plate has been introduced between the two conveyors and then suddenly pushed away, whereby the slabs fall simultaneously down on the band. To avoid scraping of the underside of the slabs it is now suggested to substitute the intermediate plate by a conveyor band having its ends attached to a fixed bar and said band being laid over two cross bars or rollers which are simultaneously displaceable mainly in the plane of the band.

3,701,407

GLASSWARE TRANSFER MECHANISM

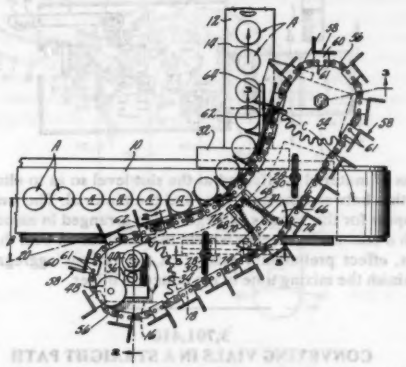
Constantine W. Kulig, Windsor, Conn., assignor to Emhart Corporation, Bloomfield, Conn.

Continuation of Ser. No. 801,395, Feb. 24, 1969, abandoned. This application Feb. 2, 1971, Ser. No. 111,855

Int. Cl. B65g *47/00*

U.S. Cl. 198—20 **1 Claim**

A transfer mechanism for use with mutually perpendicular in-feed and cross conveyors has an endless chain entrained over two sprockets arranged one on either side of the in-feed conveyor, with the first of these being driven in timed relationship with the in-feed converter and located somewhat upstream of the cross conveyor. The second sprocket is located adjacent the cross conveyor and downstream of both it and the driven sprocket. A portion of the chain extends across adjacent portions of these conveyors and carries pusher elements for feeding the articles being handled off the in-feed conveyor across a deadplate, and onto the cross conveyor in accurately index relationship to one another. A guide bar associated with the cross conveyor urges the articles being trans-



ferred outwardly beyond the extremities of the pusher elements as they reach the desired point on the cross conveyor. Means is also described for confining the chain portion referred to above for movement in a generally arcuate path such that the glassware articles on the in-feed conveyor are engaged by the pusher elements as the latter move in substantially same direction as said in-feed conveyor, and for gradually turning the articles off the in-feed conveyor across the deadplate and onto the cross conveyor.

3,701,408

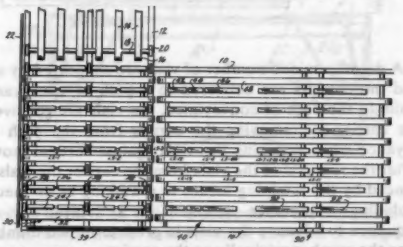
BOARD HANDLING APPARATUS

George A. Northsea, St. Petersburg, Fla., assignor to National Gypsum Company, Buffalo, N.Y.

Continuation of Ser. No. 140,974, July 8, 1968, abandoned. This application May 6, 1971, Ser. No. 140,974

Int. Cl. B65g *47/29*

U.S. Cl. 198—32 **10 Claims**



Board handling apparatus and method for arranging boards such as plasterboard, plywood and composition board into sets wherein boards are held by lifters and then teamed with another board or boards.

3,701,409

BATCHING SYSTEM

Pierre Gagnon, 5637 Wilderton Ave., and Pierre Laforest, 1945 Bruxelles St., both of Montreal, Quebec, Canada

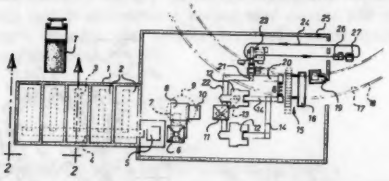
Filed July 6, 1970, Ser. No. 52,348

Int. Cl. B65g *47/18*

U.S. Cl. 198—54 **6 Claims**

A batching system for supplying weighted amounts of various aggregates, for instance to a concrete mixer, in which the

bins for storing the aggregates and the weighing hoppers have at their bottom discharge ends an elongated slot opposite which is the top run of a conveyor, spaced from said slot and which serves to close the bin or hopper and to convey the material to other equipment in such a way that shearing of the



mass of material is effected at the slot level so as to eliminate friction between the conveyor and the material. The weighing hoppers for the various aggregates are arranged in association with a common conveyor which, in combination with the hoppers, effect preliminary mixing of the various aggregates to diminish the mixing time in the concrete mixer.

3,701,410

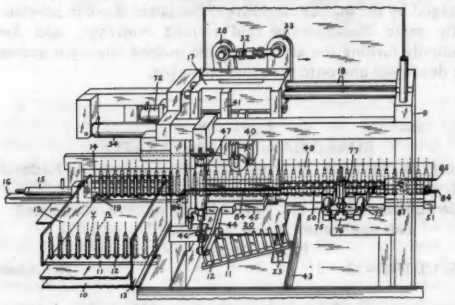
CONVEYING VIALS IN A STRAIGHT PATH

Walter A. Shields, 181-41 Henley Road, Jamaica, N.Y.

Filed Sept. 1, 1972, Ser. No. 176,963

Int. Cl. B65g *37/00*

U.S. Cl. 198—106 **13 Claims**



A predetermined number of vials are supported by a carrier and the carriers are delivered to a path of conveyance and while in the path of conveyance, the vials are removed from the carrier by removing the carrier from the path of conveyance while retaining the vials against vertical movement. After the removal of the vials from the carrier the vials are advanced by the retaining means to a walking beam mechanism including a member actuated in a delayed or omitted sequence to advance the vials in predetermined numbers less than the number originally on the carrier.

3,701,411

CONVEYOR SYSTEM

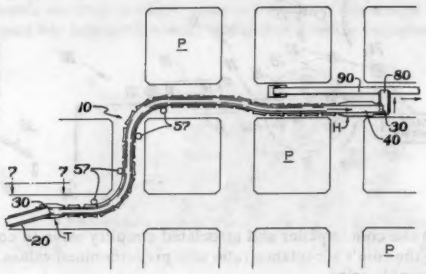
Herbert E. McGinnis, Akron, Ohio, assignor to The B.F. Goodrich Company, New York, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,320

Int. Cl. B65g *41/00*

U.S. Cl. 198—109 **8 Claims**

A mobile conveyor system for carrying bulk material in both a straight and transversely curved path having an endless elastomeric belt formed with an embedded inextensible central spine and the margins on either side corrugated for permitting transverse flexing. A self-propelled tractor is pivotally connected at each end of a chain of pivotally interconnected single-axle carriages with the load carrying and return spans of



the conveyor belt trained over pulleys provided on the tractors and on rollers on the carriages intermediate the tractors.

3,701,412

DEVICE FOR THE MOVEMENT OF ARTICLES WITH A FLAT, RIGID, HOLDING SURFACE

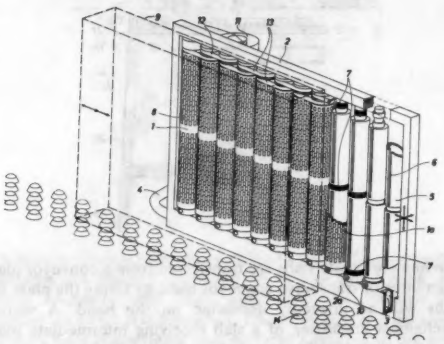
Alfred Wriedt, Kroonhorst 130, Hamburg 53, Germany

Filed Sept. 9, 1970, Ser. No. 70,640

Claims priority, application Germany, Sept. 10, 1969, P 19 45 732.0; Aug. 18, 1970, P 20 40 879.1

Int. Cl. B65g *13/02*

U.S. Cl. 198—127 R **18 Claims**



A device for conveying articles along a working plane provided with openings distributed over and movable in the plane and connected to a vacuum source, and including systems comprising combinations of such devices alone and with conventional conveyors, all to provide means for moving, conveying, sorting, distributing, and classifying articles. The device and systems thereof is useful, for example, in handling baggage and packages.

3,701,413

ROLLER FLIGHT CONVEYOR CHAIN

James B. Leahy, Farmington, and Robert B. Pierson, Orchard Lake, both of Mich., assignors to Rex Chainbelt Inc., Milwaukee, Wis.

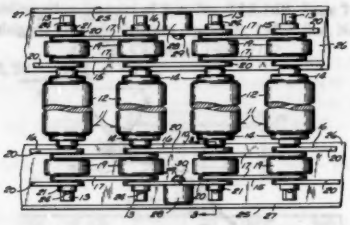
Filed Sept. 14, 1970, Ser. No. 71,823

Int. Cl. B65g *17/24*

U.S. Cl. 198—183 **3 Claims**

A roller flight conveyor includes conventional hexagonal

shaft rolls mounted between a pair of carrier roller chains. The roller chain pins are provided with hexagonal bores to receive

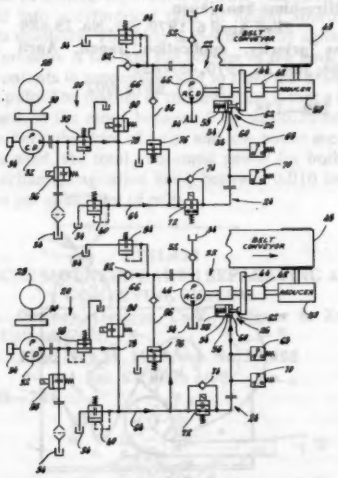


and provide mounting for the roll shaft ends and to secure the shafts against rotation.

3,701,414
FAILSAFE DECELERATING SYSTEM

Gerald C. Mayer, Wayne, N.J.; Gregory A. Vaka, Hacienda Heights, Calif.; Raymond S. Zuckermann, Teaneck, N.J., and Alonzo B. Jarman, Wrightstown, Pa., assignors to Litton Industrial Systems, Inc., Passaic, N.J.

Filed April 6, 1971, Ser. No. 131,720
Int. Cl. B65g *23/00*
U.S. Cl. 198—203 **16 Claims**

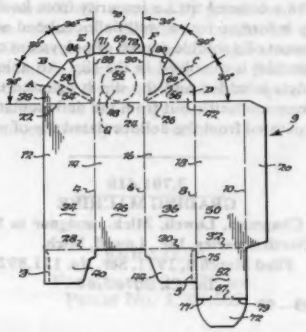


The comparison of fluid flows or electrical signals is utilized to decelerate a system (e.g., a conveyor) by regulating the fluid pressure in a brake assembly. A time decay reference signal which is related to the speed of a control motor, conveyor or other reference source is compared with a similar signal related to the speed of a controlled conveyor. The comparison of these two signals is employed to control the application of the brake in the controlled conveyor system so that the controlled conveyor will decelerate in a predetermined manner. Once the controlled conveyor is stopped, any rearward or forward movement of the controlled conveyor generates a signal which actuates the brake to again decelerate the controlled conveyor. The drive assembly of the controlled conveyor has a flywheel to insure that the minimum stopping time of the controlled conveyor from its normal operating speed exceeds a predetermined time.

3,701,415
WEB-LOCK CARTON

Milton James Tuitt, Daly City, Calif., assignor to International Paper Company, New York, N.Y.

Filed Feb. 16, 1971, Ser. No. 115,349
Int. Cl. B65d *5/50*
U.S. Cl. 206—45.14 **12 Claims**

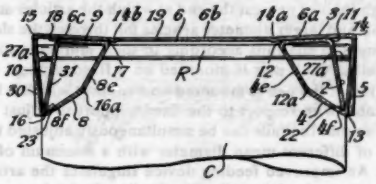


A tuck-end or tuck-frame carton containing a web-lock construction for cooperating with a cap of a tapered container such as a bottle or tube and anchoring the container within the carton.

3,701,416
HOLDERS FOR CONTAINERS

Frank D. Lawrence, 387 Chickerell Road, Weymouth, Dorset, England

Filed May 14, 1970, Ser. No. 37,088
Claims priority, application Great Britain, May 30, 1969, 27,438/69; May 30, 1969, 27,439/69
Int. Cl. B65d *61/00*
U.S. Cl. 206—65 C **10 Claims**



A holder of the kind which is snapped on the rimmed end of an article, which holder comprises an end wall for disposing adjacent to one end of a rimmed article, two side members connected to the end wall for disposing at opposite sides of the article and having rim-holding means for holding the rim formed at said end of said article, two tie walls connected to the side members and inwardly directed therefrom and directed towards said end wall and having openings for receiving the portion of the article which is adjacent to the rim, and two strut walls connected to the tie walls and disposed beside said end wall, each tie wall being divided by a folding line spaced from the side member and the strut wall which are connected to the tie wall. Each of the side members may comprise an inner side wall connected to the adjacent strut wall and an outer side wall which is connected to the end wall and to the adjacent tie wall, the inner side walls being provided with the rim-holding means.

3,701,417
PURIFICATION OF CLAY BY SELECTIVE FLOCCULATION

Venancio V. Mercade, Metuchen, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Township of Woodbridge, N.J.

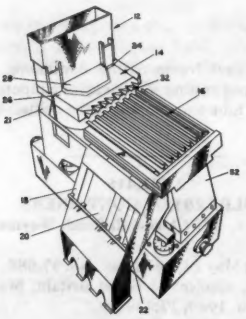
Filed Sept. 28, 1970, Ser. No. 76,219
Int. Cl. B03d *3/06*
U.S. Cl. 209—5 **9 Claims**

To remove a colored titanium impurity from kaolin clay, the impure clay is formed into a well-deflocculated aqueous slip. A small amount of a soluble source of polyvalent cations, e.g., calcium chloride, is dissolved in the slip. An anionic organic polyelectrolyte is added and the slip is agitated until titania-rich flocs form and settle out from the deflocculated slip. The flocs are separated from the deflocculated slip of purified clay.

3,701,418
GRADING MACHINE

Robert R. Chapman, Lowell, Mich., assignor to Sortex Company of North America, Inc., Lowell, Mich.

Filed March 8, 1971, Ser. No. 121,892
Int. Cl. B07c *5/04*
U.S. Cl. 209—99 **13 Claims**



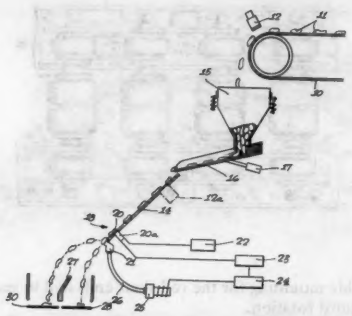
An improved diameter grading machine having a plurality of aligned pairs of rails, each pair forming a diverging slot therebetween from one end to the other for passage of articles therethrough. Articles of smallest minimum diameter fall through the slot nearest the end at which the articles are fed to the rails and larger diameter articles fall through the slot along the length of the rails according to their minimum diameter. One rail in each pair is mounted on a fixed support and the other rail of the pair is mounted on a support which is laterally adjustable with respect to the fixed support to adjust the slot width so that the rails can be simultaneously adjusted to grade items of different mean diameter with a minimum of adjustment. An improved feeding device singulates the articles for feeding to each of the rails. The feeding device has a plurality of spaced grooves of increasing width and depth juxtaposed with a plurality of ridges of increasing height and width.

3,701,419
METHOD OF AND APPARATUS FOR SORTING ORES

James Francis Hutter, and Leonard Kelly, both of Peterborough, Ontario, Canada, assignors to Sphere-Investments Limited, Nassau, Bahamas

Filed Nov. 6, 1969, Ser. No. 874,424
Claims priority, application Great Britain, Nov. 12, 1968, 53,471/68
Int. Cl. B07k *5/344*
U.S. Cl. 209—111.8 **11 Claims**

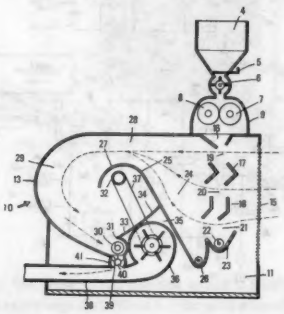
In the machine sorting of objects which have a material with magnetic properties, an auxiliary magnetic field is provided in the sorting zone to enhance a magnetic characteristic of the material with magnetic properties. In one embodiment the objects are passed through a strong, steady magnetic field just prior to passing a magnetic field detector. The magnetic field detector provides a sorting signal related to remanence of the objects, and the objects are deflected or not in accordance with the sorting signal.



3,701,420
HUSKER SEPARATOR

Toshihiko Satake, 2-38, Nishihon-machi, Saijyo-cho, Kamo-gun, Hiroshima-ken, Japan

Filed April 6, 1970, Ser. No. 25,689
Claims priority, application Japan, April 25, 1969, 44/37986; Jan. 28, 1970, 45/7855
Int. Cl. B07b *4/02*
U.S. Cl. 209—135 **6 Claims**



A husk separator in which a stream of husked grain and husks is subjected to streams of air produced by a single blower or aspirator housed inside a housing consisting of a winnowing chamber, settling chamber and chamber for housing said blower, whereby husked grain is separated from the husks in the winnowing chamber, and said streams are joined together after passing through the winnowing chamber to form in the settling chamber a stream of air which solely carries the husks, passes along an inner surface of rear side wall of the housing by centrifugal force working thereon and remotely from an inlet opening of the blower and discharges the husks from an opening connected to an outlet conduit of the blower.

3,701,421

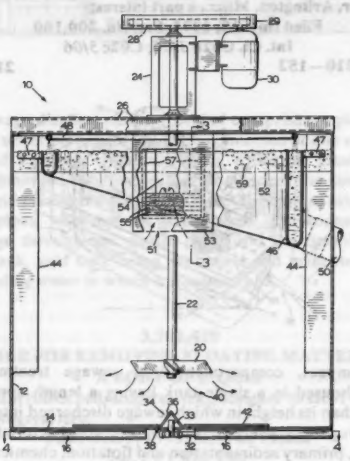
METHOD OF MINERAL SEPARATION BY FROTH FLOATATION

John Russell Maxwell, Chapais, Quebec, Canada, assignor to Technequip Limited, Weston, Ontario, Canada

Continuation-in-part of Ser. No. 735,168, June 7, 1968, abandoned. This application April 29, 1970, Ser. No. 32,906

Int. Cl. B03d 1/02, 1/22

U.S. Cl. 209—164 **3 Claims**



A method of mineral separation by froth floatation in which pulp is fed into a cylindrical tank of height approximately equal to its diameter. The pulp is mechanically agitated, and air at low pressure is fed into the bottom of the tank, to keep the tank contents in suspension and to float the desired fraction of the pulp. The feature of the invention is that a low flow of air is used, in the range between 0.05 and 0.30 cubic foot per minute per cubic foot of pulp, and low power mechanical agitation is used, the total consumed power for both the air and the mechanical agitation being between 0.010 and 0.035 horsepower per cubic foot of pulp.

3,701,422

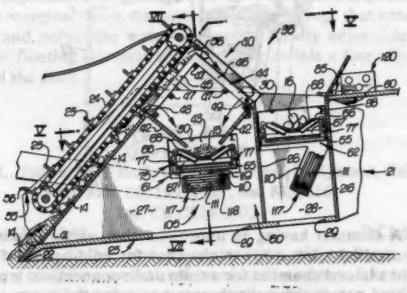
VEHICLE MOUNTED EARTH SEPARATING AND CONVEYING SYSTEM

Thomas A. Downey, Ontario, Calif., assignor to Zurn Engineers, Upland, Calif.

Filed May 21, 1970, Ser. No. 39,428

Int. Cl. B07b 1/00

U.S. Cl. 209—241 **1 Claim**



An earth moving vehicle including a scraper for collecting rocky earth and other native material to be carried upwardly by an endless paddle elevator across a grizzly for separating the material into fines and larger aggregates or tailings. The fines drop through the separator onto a continuously moving transverse conveyor adapted to discharge the fines along a line parallel to the line of vehicle movement and spaced laterally therefrom, for example in a partially filled trench for a pipeline or the like. The tailings are simultaneously discharged onto a second transversely extending continuously moving conveyor to be discharged along a longitudinal ridge, preferably on the opposite side of the vehicle from the trench being filled, and extending parallel to movement of the vehicle. The conveyors are driven by suitable motor means, preferably hydraulically actuated by pressurized fluid from a pump on the vehicle, the fluid being conducted to and from the hydraulic motors by flexible conduits wound around a sheave to maintain proper tension in the fluid lines and to avoid slack or fouling thereof, while permitting the operator to selectively adjust the discharge ends of the conveyors at desired distances laterally of the vehicle.

ERRATUM

For Class 210—198 see:
Patent No. 3,701,609

3,701,423

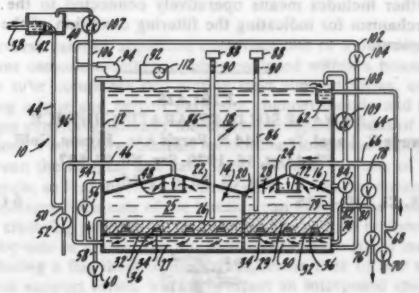
METHOD AND APPARATUS FOR FILTERING A LIQUID

Anders Lindstol, Oakville, Ontario, Canada, assignor to Ecodyne Corporation, Chicago, Ill.

Filed May 12, 1970, Ser. No. 36,568

Int. Cl. B01d 23/24

U.S. Cl. 210—80 **9 Claims**



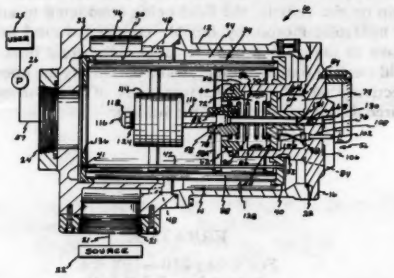
A liquid is filtered by first delivering it to a first enclosed chamber having a first filter bed, and passing the liquid downwardly through the bed. The liquid is then delivered to a backwash storage chamber above the first bed, and then to a second enclosed chamber containing a second bed. The liquid is passed downwardly through the second bed, and is then delivered to service. The apparatus includes means defining a first filter chamber containing a first filter bed, means defining a second filter chamber containing a second filter bed, and means defining a backwash storage chamber above the filter chambers. Suitable pipe means are provided for delivering liquid in series through the first filter bed, the backwash storage chamber, and the second filter bed. Pipe means are also provided for backwashing the first and second filter beds with water from the backwash storage chamber. The preferred embodiment also provides means for gas-scouring the filter beds.

3,701,424

FLUID FILTERING DEVICE

Carl A. Brown, Birmingham, and Jerald F. Thomas, Utica, both of Mich., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed June 1, 1970, Ser. No. 42,029
Int. Cl. B01d 35/14
U.S. Cl. 210—90 2 Claims



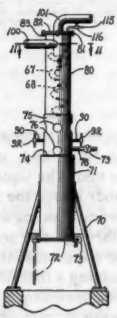
A fluid filtering device having a housing with a cavity in which a cylindrical filter element is disposed defining an annular chamber between the outer wall of the filter element and the interior of the housing, the annular chamber registering with an inlet port of the device. One end of the filter element registers with an outlet port of the device such that the normal path of fluid flow is from the inlet port into the annular chamber, radially through the walls of the filter element, axially through the interior of the filter element and externally of the filtering device via the outlet port. When the filter element becomes clogged by a predetermined amount a valve mechanism disposed at the opposite end of the filter element causes the fluid to bypass the filter element. The valve mechanism is carried within a boss integrally formed with a cover member, which in turn closes the housing cavity and further includes means operatively connected to the valve mechanism for indicating the filtering condition of the filter element.

3,701,425

SEWAGE SOLID SEPARATING DEVICE

Claude C. Laval, Jr., 2444 N. Farris Ave., Fresno, Calif.

Filed Oct. 16, 1970, Ser. No. 81,597
Int. Cl. B01d 21/26
U.S. Cl. 210—136 6 Claims



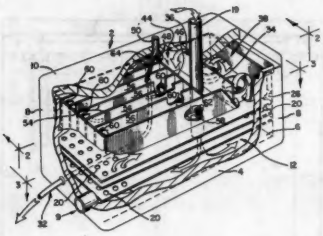
A device for separating sewage solids from sewage fluids. The device is characterized by a variably dimensioned orifice for tangentially jetting a stream of fluid into a vortexing chamber supported in an upwardly spaced relationship with an accumulator for descending solids. A flexible closure member is extended across the orifice in the direction of the flow and is provided with a first surface against which fluids passing through the orifice impinge and a second surface against which fluids within the chamber impinge, whereby the effective dimension of the orifice is varied in response to variations in the flow characteristics of the stream.

3,701,426

COMPACT SEWAGE TREATMENT APPARATUS

Robert D. Wetzel, Marshfield, Mass., assignor to James R. O'Connor, Arlington, Mass., a part interest

Filed Nov. 18, 1971, Ser. No. 200,160
Int. Cl. C02b 3/06; C02c 5/06
U.S. Cl. 210—152 21 Claims



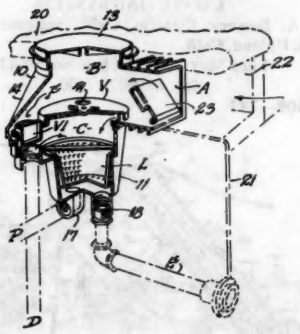
A compact, compartmentalized sewage treatment apparatus housed in a single tank having a length appreciably greater than its height in which sewage discharged into the apparatus is progressively clarified by anerobic bacterial decomposition, primary sedimentation and flotation, chemical attack to reduce coliform bacteria and BOD, and secondary sedimentation, flotation and filtration to highly clarify the effluent for discharge into lakes, rivers, harbors and other water courses.

3,701,427

SWIMMING POOL SKIMMER WITH VACUUM AND SWEEPING CONTROLS

Herbert H. Howard, Woodland Hills, Calif., assignor to Marine Swimming Pool Equipment Co., North Hollywood, Calif.

Filed Jan. 11, 1971, Ser. No. 105,338
Int. Cl. F04h 3/20
U.S. Cl. 210—169 8 Claims



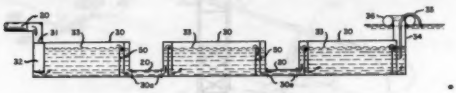
A skimmer having an upper chamber with a floating weir-controlled inlet, a lower chamber for holding a leaf basket, and a lateral chamber for a main drain connection, is provided with a rotary valve diaphragm cover for the lower chamber and a plug valve for the lateral chamber. By adjusting the two valves to different combinations of positions, the skimmer can be utilized to set the circulatory system of the pool for 1) normal skimming, 2) application of suction to the main drain in the pool bottom, for jet sweeping operation, or 3) vacuuming.

3,701,428

SEWAGE DISPOSAL SYSTEMS

Ed Lesh, 1337 Woods Run, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 662,255, July 28, 1967, abandoned. This application July 17, 1970, Ser. No. 55,644
Int. Cl. E02b *15/04*
U.S. Cl. 210—170 7 Claims



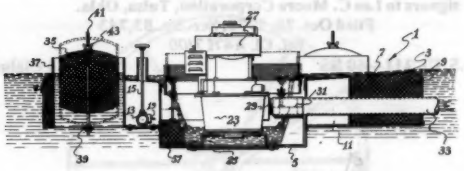
A sewage disposal unit is provided comprising a plurality of flexible sewer pipes adapted to be connected at one end to the mains of a sewage disposal system, a flexible plastic septic tank submerged in a body of water adjacent the said sewage mains and connections between the other ends of said flexible sewer pipes whereby the said mains are connected for discharge through the plastic pipes into the flexible plastic septic tank, said tank being supported and protected by the surrounding water in which it is submerged.

3,701,429

SKIMMER FOR REMOVING FLOATING MATTER FROM A BODY OF LIQUID

Orville Carroll Schell, Rogers, Ark., assignor to Hoyt Corporation, Rogers, Ark.

Filed Oct. 9, 1970, Ser. No. 79,607
Int. Cl. C02b *9/02*
U.S. Cl. 210—242 7 Claims



A skimmer for removing floating matter from a body of liquid, such as skimming oil spills from water, comprises a floating annular body having gently downwardly centrally inclined upper surfaces that terminate radially inwardly adjacent an annular weir. Oil is drawn over the inclined surfaces and flows over the weir and collects in a central sump. The weir is raised by an annular float disposed in the sump when the overflow in the sump is too great to be removed by a centrally positioned pump. A ballast chamber makes possible a rough adjustment of the draft of the skimmer. Peripherally spaced marginal floats disposed in upright casings that extend above and below the water line are vertically adjustable to trim the floating skimmer and to make possible a fine adjustment of the draft.

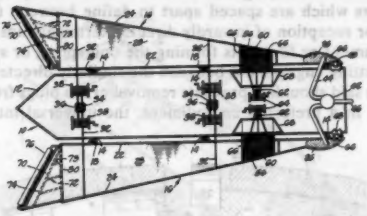
3,701,430

OIL SKIMMER

Ralph L. Tuttle, 7135 Hollywood Boulevard, Hollywood, Calif.

Filed Feb. 16, 1971, Ser. No. 115,416
Int. Cl. C02b *9/02*
U.S. Cl. 210—242 7 Claims

A structure to be used in conjunction with a barge for skimming oil spilled on the surface of harbor waters, lakes and the like comprising one or two outriggers which can be partially positioned just below the surface of the oil and which have harvesting booms that converge at the rear joining a collector sump from which the oil and water can be pumped into the barge. The system may also include a means for separating the oil from the water and also for separating out large particles of debris which are frequently found floating in these waters. For use in situations where the body of water has a light-swell condition, the outriggers include flexible leading ends which will follow the contour of the water surface.

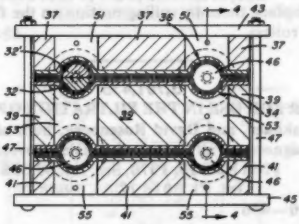


3,701,431

REVERSE OSMOSIS APPARATUS AND METHOD FOR MAKING SAME

Barry M. Brown, Rochester, and Elbert L. Ray, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 19, 1971, Ser. No. 144,970
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 14 Claims



Reverse osmosis apparatus comprises one or a plurality of reverse osmosis membrane tubes enclosed within a housing. Each tube comprises two mating rigid support forms, each having a long and narrow perforate channel therein and flat flanges extending laterally therefrom on opposite sides of the channel. Two reverse osmosis membrance sheets are clamped between the flanges, and each sheet extends into one of the channels, so that together the sheets form a tube for conducting solution. Elements of the housing can bear on the flanges with clamping pressure. A series of such tubes can be formed side-by-side in a unit. The apparatus advantageously is made by placing a flat sheet of membrane across each of first and second support forms, with or without an interposed spacer sheet, depressing the membrance into the channel by a mandrel or by applying a gas pressure differential, and then fitting the two together with the channels facing toward one another and in register. The flanges are then clamped together and the whole is enclosed in a housing in spaced relation thereto for collecting solvents. Each support form can have a series of such channels spaced from and parallel to one another.

3,701,432

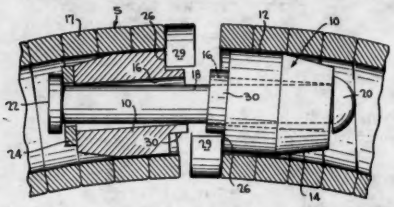
ARTICULATED CONNECTOR

William L. Schlegel, Stanhope, N.J., assignor to Komline-Sanderson Engineering Corporation, Peapack, N.J.

Filed Nov. 1, 1971, Ser. No. 194,168
Int. Cl. B01d *33/14*
U.S. Cl. 210—401 2 Claims

A connector for the terminal ends of the coil springs such as are employed in a coil spring filter, includes a pair of plugs each proportioned for reception within the said terminal ends,

and means interconnecting the plugs for universal relative angular movement and to withstand the spring tension. The adjacent ends of the plugs are formed with relatively opposed shoulders which are spaced apart to define between them a space for reception of inwardly directed terminal ends of the wire filament or filaments forming the coil spring or springs. The abutting engagement between the similarly directed ends with the said shoulders prevents removal of the plugs from the springs. In a preferred embodiment, the universal interconnection between the plugs is defined by forming the plugs with relatively aligned bores through which is loosely disposed a rigid pin having sufficient clearance with the bores to permit limited angular movement of the plugs in an axial plane of the pin. The ends of the pins are enlarged to retain the plugs thereon and the plugs are relatively freely rotatable to release any torsional forces in the spring ends which might tend to laterally displace them by rolling motion on the filter drum or associated rollers.



3,701,433

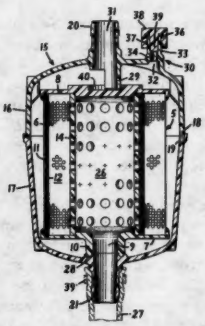
FILTER FOR USE IN THE FILTRATION OF BLOOD

Sidney Krakauer, and David Rosenberg, both of Glen Cove N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Filed Nov. 10, 1970, Ser. No. 88,356

Int. Cl. B01d *27/06, 39/08*

U.S. Cl. 210—436 **18 Claims**



A filter element is provided for use in the filtration of blood such as in cardiopulmonary bypass techniques in open heart surgery, comprising a woven square weave mesh of polyester monofilaments having a pore size within the range from about 25 to about 50 microns.

3,701,434

TEST TUBE SYSTEM FOR SEPARATING BLOOD INTO SERUM AND RED CELLS

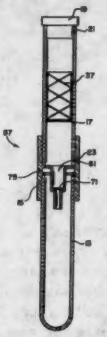
Hugh C. Moore, 66 East Parkway North, Memphis, Tenn.

Filed March 15, 1971, Ser. No. 123,990

Int. Cl. B01d *29/04*

U.S. Cl. 210—477 **4 Claims**

A test tube system for separating blood into serum and red cells. The system includes a first test tube, a second test tube and a connector joining the first test tube and the second test tube. The first test tube is for initially containing the blood sample and includes a sleevelike body portion that is closed at the upper end with s stopper and is closed at the lower end by a cap removably threaded on the end thereof. The first test tube has a plurality of non-wettable strands extending across the interior thereof for providing a place for the blood to clot. The connector is adapted to be threaded onto the lower end of the first test tube and the upper end of the second test tube. The connector includes a filter for the serum to flow therethrough into the second test tube.



3,701,435

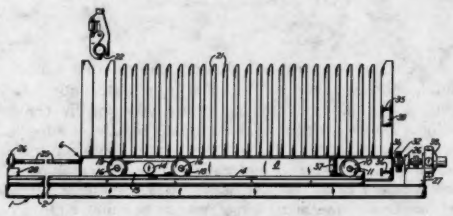
HORIZONTALLY MOVING PIPE RACK

Homer J. Woolslayer; Joseph R. Woolslayer; Cecil Jenkins, all of Tulsa, and Erwin A. Campbell, Bixby, all of Okla., assignors to Lee C. Moore Corporation, Tulsa, Okla.

Filed Oct. 26, 1970, Ser. No. 83,743

Int. Cl. A47f *7/00*

U.S. Cl. 211—60 RS **1 Claim**



A carriage is mounted on a track. Rigidly mounted on the carriage there may be a row of parallel vertical posts that are spaced apart to provide vertical slots for receiving reclining pipe. The carriage is movable along the track intermittently to locate each of the slots in succession at a pipe-receiving station. Preferably, the carriage is narrow and a like carriage is spaced laterally from it and is movable in unison with it.

3,701,436

WATER SKI RACK

Harvey Keith Adams, Santa Maria, Calif., assignor to Radco Manufacturing Co., Inc., Santa Maria, Calif.

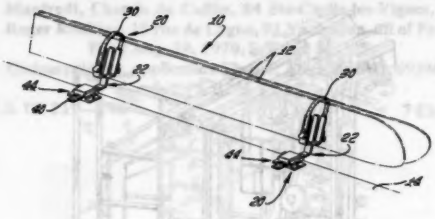
Filed Dec. 28, 1970, Ser. No. 101,489

Int. Cl. A47b *81/00*; A47f *7/00*

U.S. Cl. 211—60 SK **5 Claims**

A water ski rack comprising two spaced rack units for supporting a pair of water skis adjacent the respective ends thereof. Each rack unit includes a fork-like rack element having three tines adapted to receive the skis therebetween. Each

rack element has a projecting prong adapted to be plugged into a socket in a bracket mounted on a suitable supporting



structure. A spring clip carried by each bracket and engageable with the corresponding prong retains it in its socket. Straps secure the skis in the rack elements.

3,701,437

TURNTABLE TYPE DISPLAY RACK ASSEMBLY

Karl E. G. Splik, Breviksvagen 114, 42166 Vastra Frolunda, Sweden

Filed July 22, 1970, Ser. No. 57,046
Int. Cl. A47f 5/00
U.S. Cl. 211—133 **4 Claims**

A display rack assembly has a turnable central column with rails thereon which have slits into which ends of lateral brackets are detachably inserted at any desired height of the rails, sectional racks are positioned on said brackets and guiding means are located on the undersides of the racks and each rest on the upper edges of one of said brackets for the purpose of supporting a display tray, rack, basket or the like on each rack.

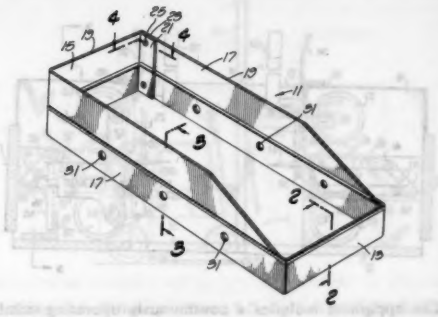
3,701,438

DISPLAY PLACE-KEEPER

Hugo J. Maisnik, Monterey Park, Calif., assignor to Myer Show Print, Inc.

Filed Feb. 27, 1969, Ser. No. 802,898
Int. Cl. A47f 5/11; B65d 5/02
U.S. Cl. 211—184 **4 Claims**

A collapsible mechanical device is disclosed for keeping a place reserved in a frozen-food type of show case or shelf for a particular product, even when the space is empty. The disclosed place-keeper displays the goods conveniently until sold



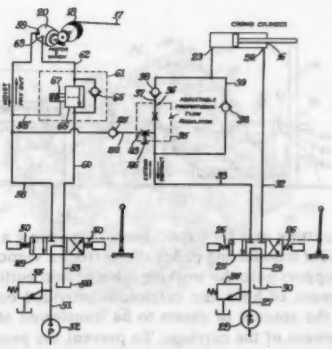
out, and then assures that the empty space is not filled up with goods of a different source.

3,701,439

SYSTEM FOR AUTOMATICALLY PAYING-OUT LINE PROPORTIONAL TO EXTENSION OF CRANE BOOM

William J. Lado, Rome, N.Y., assignor to Pettibone Corporation, Chicago, Ill.

Filed May 1, 1970, Ser. No. 33,726
Int. Cl. B66c 23/06
U.S. Cl. 212—55 **3 Claims**



In a hydraulic system, a proportional flow valve is used for automatically paying-out line as a crane boom is extended so that extension of the boom will not draw up the hook or cause damage if there is no free line. The proportional flow valve diverts to the winch motor some of the hydraulic fluid directed by a manual valve toward the boom-extending cylinder. The necessary pressure in the line to the winch motor, required for actuating a safety valve in the return line from the winch motor, is achieved through the use of a special reversing valve for the winch motor. This reversing valve has a combination closed and open center spool so that when centered it blocks the line to which fluid is diverted while leaving open the return line.

3,701,440

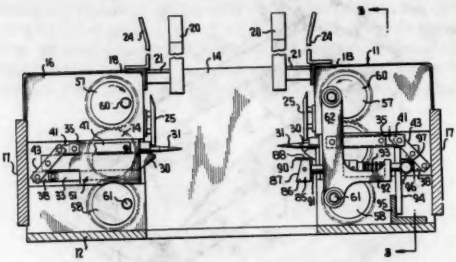
EGG CARTON DENESTER MACHINE

Robert F. Windstrup, and Charles J. Chebuhar, both of Chicago, Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed June 20, 1969, Ser. No. 834,952
Int. Cl. B65g 59/06
U.S. Cl. 214—8.5 A **11 Claims**

This disclosure relates to an article denesting apparatus wherein nested articles are supplied in stacked form and

mechanism is provided for separating a lowermost article from the stack while supporting the remaining articles of the stack.



The apparatus includes a continuously operating combined rotary and reciprocatory movement drive mechanism for the support and separator bars of the apparatus.

3,701,441

TRANSFER DEVICE FOR USE IN CUTTING UNITS FOR PAPER SHEETS

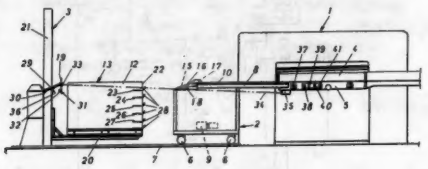
Gustav Ake Bernhard Gadler, Lantmannavagen 9, S-342 00 Alvesta, Sweden

Filed June 28, 1971, Ser. No. 157,226

Claims priority, application Sweden, Jan. 28, 1970, 1033/70

Int. Cl. B65g *59/02*

U.S. Cl. 214—8.5 SS **5 Claims**



A cutting unit for paper sheets comprising a conveyor carriage for transferring paper sheets from a vertically displaceable support unto the working table of said cutting unit, by engagement of horn-like extensions provided on said carriage with the amount of sheets to be transferred at each transfer movement of the carriage. To prevent the paper sheets from sliding during transfer and to ensure correct positioning thereof on the carriage so as to avoid improper engagement with the feeder roller advancing the sheets from the conveyor onto the cutting means proper, a counter-holder means is arranged which operates independently of the vertically movable support and is adapted, upon displacement of the conveyor carriage into the stack of sheets, to lift the rear end of said sheets. The counter-holder preferably consists of a plate mounted on arms which are hingedly connected to a frame. Guide means are arranged on the conveyor carriage to cooperate with roller means on the counter-holder to lift it during displacement of the carriage.

3,701,442

STORAGE AND RETRIEVAL APPARATUS

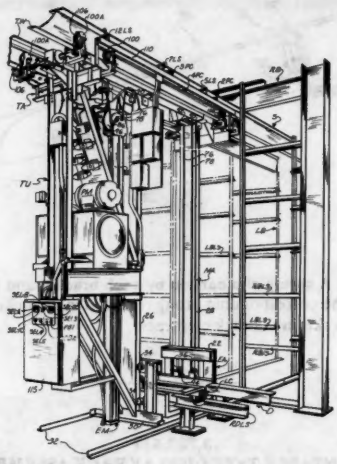
Franklin W. Dunning, Painesville, and Henry A. Gorjanc, Mentor, both of Ohio, assignors to McNeil Corporation

Continuation of Ser. No. 769,444, Oct. 21, 1968, abandoned, which is a continuation of Ser. No. 470,380, July 8, 1965, abandoned. This application Sept. 25, 1970, Ser. No. 75,668

Int. Cl. B65g *1/06*

U.S. Cl. 214—16.4 A **1 Claim**

Material handling apparatus for storing and retrieving loads, which is presettable at a first area for automatic transfer of a load between the first area and load supports of a second area and also between different load supports of the second area. The apparatus can be preset to select two positions in the second area at which load transfer is to be effected and will effect the transfer by movement directly from the first to the second selected positions regardless of their locations relative to the first area and independently of external commands once a transfer is initiated.



3,701,443

TRAILERS

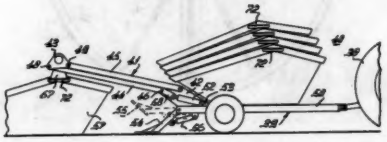
Cornelis Van Der Lely, 7 Bruschenrain, Zug, Switzerland

Filed Oct. 21, 1970, Ser. No. 82,589

Claims priority, application Netherlands, Oct. 21, 1969, 6915852

Int. Cl. B60p *1/48*

U.S. Cl. 214—77 **7 Claims**



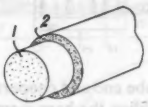
The combination of a trailer with a lifting mechanism and one or more relatively large containers for receiving agricultural produce and which, when empty, can be stacked one in the other. The lifting mechanism comprises a pair of parallelogram rod systems which extend from either side of the trailer and are pivotable relative thereto, a shaft connecting the upper ends of the rod systems for supporting engagement means adapted to connect to pins which extend from the upper rims of the containers whereby when such connection is made, a single container or a plurality of stacked containers can be loaded or unloaded from the trailer or stacked containers on the trailer by pivoting the lifting mechanism. The engagement means may be selectively affixed to its supporting shaft for maintaining the containers at a desired inclination throughout the loading or unloading cycle irrespective of their center of gravity. The containers may be provided with a pouring spout and tipped by the lifting mechanism to cause material therein to pour out of same.

3,701,444

FLEXIBLE WELDING ROD HAVING ORGANICALLY BOUND CORE AND PROTECTIVE SHEATH

Rene Clement, Route de Bigary, 26 Suze-la-Rousse; Pierre Manfredi, Chemis de Caffin, 84 Ste-Cecile-les-Vignes, and Roger Roulliay, 15 rue de Cygne, 91 Vauhallan, all of France

Filed Aug. 24, 1970, Ser. No. 66,305
Claims priority, application France, Aug. 28, 1969, 6929483
Int. Cl. B23k *35/22*
U.S. Cl. 219—146 7 Claims



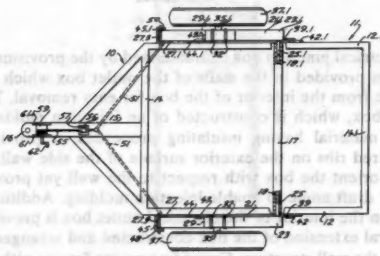
Primarily intended for arc welding, the cord consists of a core formed of a mineral powder which is mixed with an organic binder and contains at least the constituents of a welding flux, the core being encased in a flexible protective sheath of organic material.

3,701,445

TILTING BED TRAILER

Alfred E. Haslem, 5363 Ranger Avenue, North Vancouver, B.C., Canada

Filed Sept. 13, 1971, Ser. No. 179,635
Int. Cl. B60p *3/10*
U.S. Cl. 214—506 6 Claims



A tilting bed trailer having a bed frame connectable at one end to a towing vehicle, and having supporting arms, ground wheels mounted on the supporting arms, the arms being connected for swinging movement at after ends to the frame so that when the arms are swung between horizontal and upwardly sloped positions the frame is moved between elevated and lowered positions.

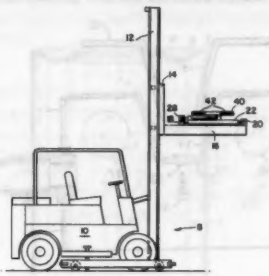
3,701,446

HORIZONTALLY TURNABLE MATERIAL HANDLING FORKS

Raymond Leonard Smith, Jr., Southbury, Conn., assignor to C & M Manufacturing Company, Inc., Bethesda, Md.

Filed Dec. 2, 1970, Ser. No. 94,334
Int. Cl. B66f *9/14*
U.S. Cl. 214—730 7 Claims

Forks are mounted on a vertical pin which extends upright from a carrier elongated in the direction of travel of a lift truck. The carrier moves between parallel rails mounted on a platform of a carriage which is vertically movable on a mast. A turning device connected to the forks and to the carrier turns



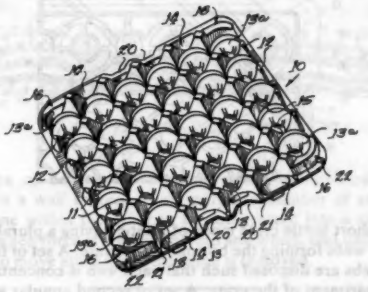
the forks to one of three positions, left, right or straight ahead. Another device moves the carrier to the left or to the right on the platform.

3,701,447

TRAY CONSTRUCTION

James W. Boyd, Crown Point, Ind., and Clifford H. Bessett, South Holland, Ill., assignors to Packaging Corporation of America, Evanston, Ill.

Filed Oct. 20, 1970, Ser. No. 82,407
Int. Cl. B65d *81/00*
U.S. Cl. 217—26.5 3 Claims



A multi-sided tray of molded construction is provided having downwardly extending pockets arranged in spaced parallel rows, and upwardly projecting posts arranged in spaced parallel rows disposed in alternate relation with the rows of pockets. At the corners of the tray are disposed corner pockets which are partially delimited by elongated, upwardly projecting, hollow protuberances. The height of each protuberance is less than the height of said posts. Each protuberance has one end thereof terminating at a post disposed adjacent the corner pocket.

3,701,448

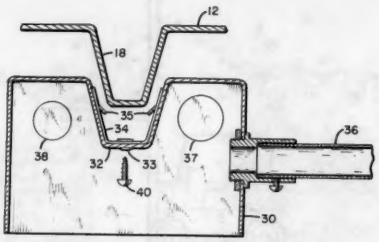
ELECTRICAL JUNCTION BOX

James D. Vadnais, Stillwater, Minn.

Filed April 29, 1971, Ser. No. 138,639
Int. Cl. H02g *3/08*
U.S. Cl. 220—3.9 3 Claims

An electrical junction box having an indentation or groove on one side so that the box can be fitted over the ridges com-

monly found in typical roofing panels. Electrical conduit connecting holes in the box are positioned so that the conduit is



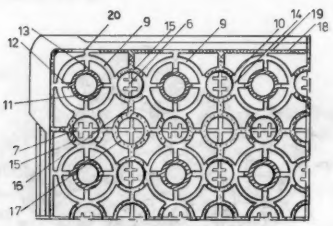
directly in line with the edge of the ridges so as to avoid the necessity for bending the pipe. A spring clip in the groove on the box holds the electrical junction box in place on the ridge.

3,701,449

SHORT BOTTLE CRATES MADE OF PLASTIC

Alexander Schoeller, Karl-Marr Str. 10, 8000 Munich-Solln, Germany

Filed June 14, 1971, Ser. No. 152,719
Claims priority, application Switzerland, Dec. 9, 1970, 18254/70
Int. Cl. B65d *1/24, 1/35, 57/00*
U.S. Cl. 220—21 **8 Claims**



A short bottle crate made of plastic having a plurality of annular webs forming the bottom of the crate. A set of first annular webs are disposed such that each web is concentric with a compartment of the crate. A set of second annular webs connect adjacent first webs and the centers of the second annular webs lie at the centers of the compartment walls. Projections are fashioned on the second annular webs between the regions of their connections with the first annular webs and extend outwardly to a level below the level of the first annular webs. The projections are dimensioned such that the crate may be supported on the bottle tops in a filled crate in displaced fashion. The projections do not interfere with the normal crate stacking.

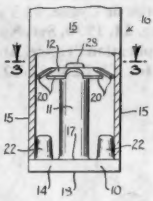
3,701,450

SELF-HOLDING TUBE END CLOSURES

Samuel I. Belzberg, Cote St. Luc, Quebec, Canada, assignor to Unican Security Systems, Ltd., Montreal, Quebec, Canada

Filed March 24, 1971, Ser. No. 127,697
Int. Cl. B65d *41/00*
U.S. Cl. 220—24 **6 Claims**

A closure for an end of a square cross section tube comprises a base member having sides corresponding to those of the tube and a stem projectable into the end of the tube. A anchor disc is axially immovably connected to the outer end of the stem but can be rotated about the axis thereof. Barb-like fingers on the periphery of the disc allow insertion thereof into the tube end but preclude its withdrawal therefrom. The fingers also prevent rotation of the disc about its axis after it has entered the tube end. During application of the closure to a tube end, the base and stem can be unitarily rotated with respect to the disc to dispose locating elements on the base in



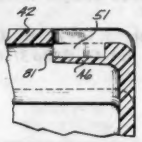
position to enter the tube end and cooperate with internal wall surfaces thereof in holding the base member with its sides in coincidence with those of the tube.

3,701,451

MOLDED ELECTRICAL JUNCTION BOX

Edgar C. Schindler, Seattle, and John C. McEachron, Tacoma, both of Wash., assignors to Nelco Corporation, Kent, Wash.

Filed Sept. 3, 1970, Ser. No. 69,266
Int. Cl. B65d *17/00*; H02g *3/08*
U.S. Cl. 220—27 **11 Claims**



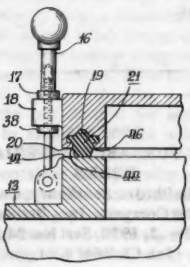
An electrical junction box characterized by the provision of knockouts provided in the walls of the outlet box which are accessible from the interior of the box for easy removal. The junction box, which is constructed of an injection moldable resinous material having insulating properties, is provided with tapered ribs on the exterior surface of the side walls to properly orient the box with respect to the wall yet provide sufficient draft angle to enable injection molding. Additional volume on the interior of the electrical outlet box is provided by a lateral extension of the box constructed and arranged to fit within the wall structure. Grounding means for use with the boxes is provided wherever necessary.

3,701,452

SEALING GASKET FOR A CONTAINER

Erwin W. Tonn, 7734 S. Christiana, Chicago, Ill.

Filed Sept. 7, 1971, Ser. No. 178,280
Int. Cl. B65d *53/00*
U.S. Cl. 220—46 R **6 Claims**



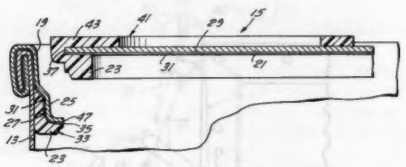
An improved sealing gasket for providing a seal for vessels subject to a differential in pressure.

3,701,453

PLASTIC RING PULL EASY OPEN END

John Robert Platt, Crystal Lake, and Stanley Edward Rohowetz, Barrington, both of Ill., assignors to American Can Company, Greenwich, Conn.

Filed June 17, 1971, Ser. No. 154,064
Int. Cl. B65d 17/20
U.S. Cl. 220—54 10 Claims



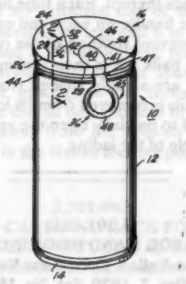
An easy open end for a container which incorporates an injection molded, plastic opening feature having no exposed, sharp, bare edges. An adhesive promoting coating system permanently bonds the plastic to the inside surface of the end.

3,701,454

EASY OPENING CONTAINER CLOSURE

Richard Conrad Thorp, Crystal Lake, Ill., assignor to American Can Company, Greenwich, Conn.

Filed July 6, 1971, Ser. No. 159,651
Int. Cl. B65d 17/20
U.S. Cl. 220—54 18 Claims



An easy-open end closure for attachment to a container body is provided which has a top panel, a peripheral depending skirt, a pair of score lines defining a partial opening closure section which includes a portion of the skirt and a portion of the top panel, a tab connected to the section for tearing the partial opening section along the score lines to provide a limited opening through the closure, another pair of score lines defining a full opening closure section which includes a portion of the skirt and a portion of the top panel, and another tab connected to the full opening closure section for tearing the same along the other pair of score lines to effect removal of the entire end closure from the container.

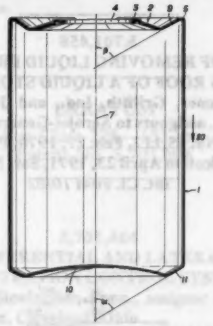
3,701,455

CAN FOR LIQUIDS AND PROCESS FOR CLOSING SAME

Herbert Warnecke, Vienna, assignor to Tuwa-Plastik Dr. Herbert Warnecke Erzeugung von Kunststoffartikeln, Vienna, Austria

Filed Oct. 12, 1970, Ser. No. 79,955
Claims priority, application Austria, Oct. 17, 1969, 9836; April 20, 1970, 3541
Int. Cl. B65d 7/42
U.S. Cl. 220—66 8 Claims

The can of the invention is intended for containing liquids, such as oils, is made of a plastic material, and is substantially circular in cross-section. The top end wall is provided with a central opening having a reinforced rim and is adapted to be closed with a heat sealing foil. An elevated border at the outer circumference of the top end wall concentrically surrounds the rim and is connected with said rim by a wall portion having the shape of a flat cone.

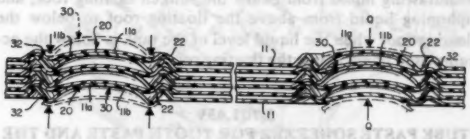


3,701,456

STACKABLE MEMBERS

John D. Alroy, 380 Mountain Road Ste:1713, Union City, N.J.

Filed April 2, 1970, Ser. No. 25,051
Int. Cl. B65d 21/02, 1/34
U.S. Cl. 220—97 C 23 Claims



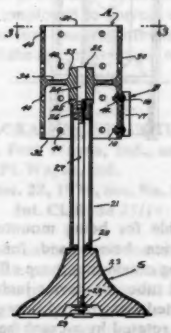
Articles of deformable material which are formed with means on a wall thereof which permit a number of articles nested one within the other to be compressed into a smaller volume when force is applied thereto and which also cause the articles to move apart when the force is removed.

3,701,457

CUP DISPENSER WITH REVOLVING ADAPTER

William G. Anderson, 5942 Gildred Circle, Huntington Beach, Calif.

Filed Feb. 26, 1971, Ser. No. 119,176
Int. Cl. B59g 59/06
U.S. Cl. 221—120 4 Claims



A carrier comprising a stand with an elevated bearing means rotatably carrying an adapter supporting mountings at

various heights, for replaceably securing and transporting a plurality of vertically disposed elongated cup dispensers into convenient proximity to the person withdrawing various cups of selected size or kind therefrom.

3,701,458

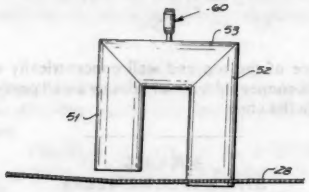
A METHOD OF REMOVING LIQUID FROM A SUNKEN FLOATING ROOF OF A LIQUID STORAGE TANK

Robert B. Wagoner, Griffith, Ind., and John S. Kinghorn, Houston, Tex., assignors to Aerojet-General Corporation

Division of Ser. No. 15,112, Feb. 27, 1970, Pat. No. 3,606,071. This application April 23, 1971, Ser. No. 137,008

Int. Cl. F04f *10/02*

U.S. Cl. 137—1 **9 Claims**



A method for removing liquid from a sunken floating roof of a liquid storage tank. The method comprises the steps of: withdrawing liquid from below the sunken floating roof; and siphoning liquid from above the floating roof to below the floating roof when the liquid level of the tank is below the accumulated liquid above the floating roof.

3,701,459

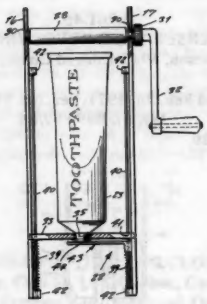
TUBE PASTE SQUEEZER FOR TOOTH PASTE AND THE LIKE

Ernest Ward, R. R. No. 1, Box 93 A, Piqua, Ohio

Filed Nov. 16, 1970, Ser. No. 89,708

Int. Cl. B65d *35/56*

U.S. Cl. 222—102 **2 Claims**



A device adaptable for being mounted on a wall of a bathroom, the device being used for dispensing either toothpaste or shaving cream in a more efficient manner than from a losely placed tube, the device including a case within which the tube is fitted so to be fed between a pair of rollers which are manually rotated by a crank handle outside of the case so that paste can be dispensed from the bottom of the device.

3,701,460

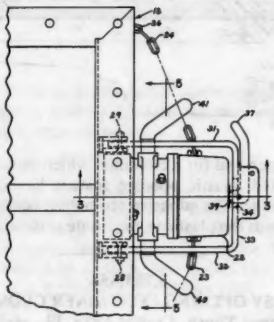
HOPPER OUTLET VALVE PROVIDING LADING SAMPLING

Richard H. Dugge, and John L. Carney, Jr., both of St. Louis, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed July 19, 1971, Ser. No. 163,737

Int. Cl. B67d *5/54*

U.S. Cl. 222—193 **10 Claims**



A pneumatic hopper outlet having a valve operated by handles at each end of the outlet. Each end of the outlet has a sleeve or tube closed by caps adapted to be locked by bails extending over the ends thereof. Each tube has a pair of handles near each end. One handle on each end engages a portion of each bail so as to prevent rotation of the rotary tube in either direction when the bails are in their locking position, and the other two handles are slightly spaced from the bails. Thus, when one of the bails is removed from its locking position, the tube can be rotated to partially open the valve for the purpose of obtaining a sample of the lading.

3,701,461

HOOK FOR HAND HOOKING RUGS

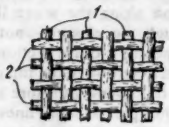
Louis Bailly, En Bon-Vallon, Corsier sur Vevery, Switzerland

Filed Dec. 2, 1970, Ser. No. 100,123

Claims priority, application Switzerland, Dec. 19, 1969, 18891/69

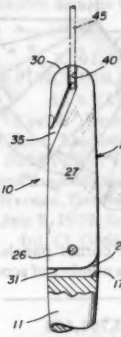
Int. Cl. D05b *85/00*

U.S. Cl. 223—102 **7 Claims**



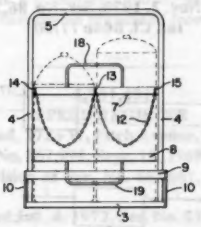
A hook for the hand hooking of rugs comprises a body tapering in narrowing sense from a hook portion to its opposite end and a V-shaped member pivotably connected to the body and riding in a slot therein to open and close the hook portion. In its closed position a knuckle at the vertex of the V-shaped member emerges from the body at the side opposite the hook portion, so that pressure on the knuckle results in pushing the V-shaped member into its open position. The knuckle is located further from the hook portion than the arm of the V-shaped member which effects its closure.

3,701,462
NEEDLE
Howard B. Riley, 114 West Reynolds, Newton, Ill.
Filed Oct. 26, 1971, Ser. No. 192,245
Int. Cl. D05b *85/00, 91/00*
U.S. Cl. 223—102 **6 Claims**



A needle having an elongated body tapered to a point at one end thereof and having two spaced apart legs at the other end thereof, a thread holder pivotally mounted on the body between the spaced apart legs and having an elongated slot therein extending to one side thereof and ending at opposed grooves in the thread holder extending from the slot to the end of the thread holder away from the pivotal connection. The thread holder is movable between a thread receiving position wherein the slotted and grooved end of the thread holder is spaced from the spaced apart legs and is in position to receive thread in the slot and a thread locking position wherein the thread holder is between the spaced apart legs to lock the thread between the grooves in the thread holder and the spaced part legs, the thread being locked in the needle and extending therefrom away from the pointed end thereof when the thread holder is in the thread locking position thereof.

3,701,463
HOLDING AND CARRYING RACK FOR MINIATURE OXYGEN AND FUEL GAS TANKS
Herbert C. Goss, Glenshaw, Pa., assignor to Goss Gas, Inc., Glenshaw, Pa.
Filed Dec. 22, 1970, Ser. No. 100,583
Int. Cl. B65d *61/00*
U.S. Cl. 224—45 R **3 Claims**

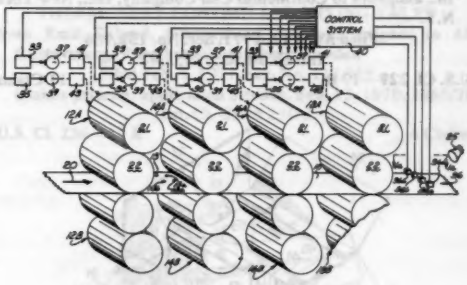


An elongated horizontal base plate is provided for supporting a pair of miniature oxygen and fuel gas tanks side by side in upright position. Secured at their lower ends to the back corners of the plate is a pair of parallel upright side rails, the upper portions of which are inclined forward over the base plate. The upper ends of the side rails are connected by a handle. A cross member extends between the side rails and is connected to them below their inclined portions. Attached to the side rails above the base plate is a rigid retaining member that extends along the front of the base plate for holding tanks on the plate. The handle is located above the center of gravity of the rack so that the base plate will remain substantially horizontal when the rack is lifted by its handle. Hooks may project from the back of the rack to support a coil of hoses attached to the tanks.

ERRATUM

For Class 226—155 see:
Patent No. 3,701,608

3,701,464
CIRCUMFERENTIAL AND LATERAL WEB REGISTRATION CONTROL SYSTEM
James N. Crum, Stonington, Conn., assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed Oct. 15, 1970, Ser. No. 81,041
Int. Cl. B41f *5/16*; B65h *23/02*
U.S. Cl. 226—3 **17 Claims**

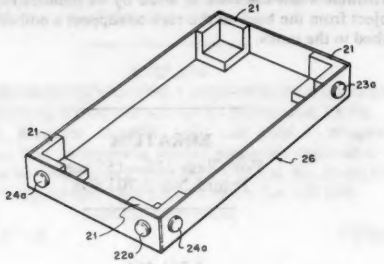


A control system for controlling registration in a multi-color web-fed printing press system senses register marks which are printed on the web. Any circumferential registration error which is detected by sensors that sense the register marks is translated into a count in a circumferential counter which is coupled to a circumferential motor control circuit. The circumferential motor control circuit drives a stepping motor which in turn drives appropriate gearing to correct for the circumferential misregistration of the web as directed by the count in the circumferential counter. The apparent lateral registration error is then measured in a similar manner and is stored as a count in a lateral counter which corrects for lateral misregistration through a stepping motor and appropriate gearing. The error previously determined in the circumferential register is employed to correct the apparent error in the lateral register so that it represents the true lateral registration error instead of the apparent lateral registration error.

3,701,465
PACKAGING STRUCTURE
Robert H. Richter, Fort Wayne, Ind., assignor to The Magnavox Company, Ft. Wayne, Ind.
Filed Dec. 28, 1970, Ser. No. 104,687
Int. Cl. B65d *25/14*
U.S. Cl. 229—14 C **5 Claims**

A resilient member having three round projections on each outer side for use in a packaging container for receiving and carrying articles to be protected against shock as may be experienced in loading, transporting, and storing. In ordinary application, a cardboard tray is supported at each corner with a resilient member with the projections of such member being in registration with openings in each corner of the tray to posi-

tion the resilient members, hold the tray sides together, and to form a resilient cushion at each corner for supporting an article transported in the container. In the usual circumstance, there are two trays per container, one at the bottom of the article and one at the top.

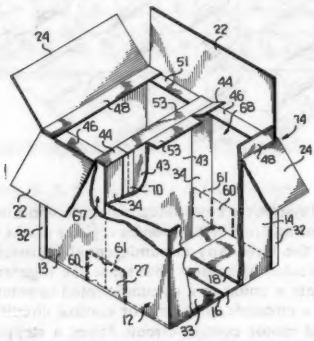


3,701,466

SHIPPING CONTAINER WITH EMPTYING CHUTE

James R. Woodrow, and Robert R. Lynski, both of Chicago, Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed April 12, 1971, Ser. No. 132,986
Int. Cl. B65d *5/72, 5/48*
U.S. Cl. 229—17 B **11 Claims**



This disclosure relates to a corrugated shipping container which is provided with a dispensing spout. The shipping container is formed of an outer container having the interior thereof divided into a plurality of adjacent compartments by internal liners. Adjacent portions of liners defining adjacent compartments are provided with dispensing opening defining flaps, which in turn, are aligned with a dispensing opening defining flap in a wall of the outer container. The flaps open in opposite directions both to facilitate the dispensing of material through the openings defined thereby and to reinforce one another against accidental opening. In addition, upstanding liner walls are disposed intermediate the ends of the flap of the outer container so as to reinforce the flap against inward deformation.

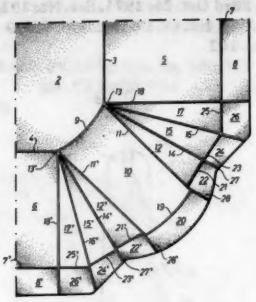
3,701,467

TRAY-LIKE STACKABLE CONTAINER

Hans Arne Valendier Johansson, Eslov, Sweden, Mo och Domsjo Aktiebolag Ltd. Co., Ornskoldsvik, Sweden

Filed July 6, 1971, Ser. No. 160,043
Claims priority, application Sweden, July 6, 1970, 9347/70
Int. Cl. B65d *5/24*
U.S. Cl. 229—31 R **6 Claims**

Nestable tray-like containers are provided having an unbroken rim flange and rounded corners. The containers are erected from a flat blank to an angle of less than 90° to the horizontal plane, and the corner panels folded bellow-wise and joined together along a number of score lines.

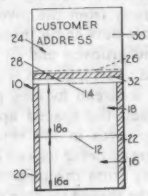


3,701,468

MAILING ENVELOPE AND MESSAGE PIECE/LABEL COMBINATION

Wilbur L. Steinhauser, Cincinnati, Ohio, assignor to Steinhauser Incorporated, Cincinnati, Ohio

Filed Dec. 4, 1970, Ser. No. 95,081
Int. Cl. B65d *27/00*
U.S. Cl. 229—70 **4 Claims**



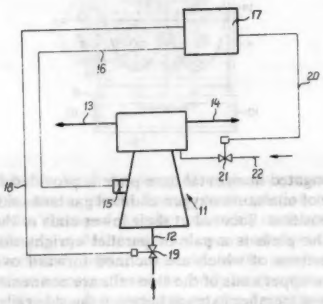
Structure defining an envelope pocket is provided with an enlarged flap divided by a line of perforations into a sealing tab for the envelope pocket and a detachable, gummed message piece/label.

3,701,469

CENTRIFUGE SLUDGE CONTROL AND METHOD OF OPERATING SAME

Vilgot Raymond Nilsson, Hagersten, Sweden, assignor to ALFA-Laval AB., Tumba, Sweden

Filed Nov. 2, 1970, Ser. No. 86,218
Int. Cl. B04b *11/00*
U.S. Cl. 233—20 A **9 Claims**



When the rotor of a sludge centrifuge is to be emptied of its contents during operation, its peripheral sludge outlets are

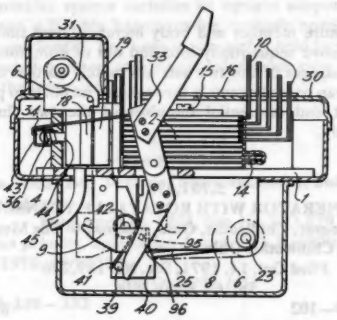
opened to discharge at least part of the settled sludge; and while liquid is still retained in the rotor, its balance condition is determined by a sensing means. If the latter senses a predetermined degree of unbalance at the prevailing speed of the rotor, as when sludge adheres to the rotor wall and thus fails to discharge, a suitable control is signalled to prevent complete emptying of the rotor at the prevailing speed, thereby avoiding possible damage to the rotor.

3,701,470

APPARATUS FOR PUNCHING A DATA CARRIER SUCH AS A TAPE

Wolfgang Binder, Kyritz; Hasso Kalkreuth, Stolpe/uber Neustadt; Josef Glaser, Leubnitz bei Werdau, and Gunter Fahrenkrug, Alt Daber, all of Germany, assignors to VEB Kombinat Mess-und Regelungstechnik Dessau Werk Massindustrie Werdau, Werdau, Germany

Filed July 8, 1970, Ser. No. 53,043
Int. Cl. G06k *1/10*
U.S. Cl. 234—99 **8 Claims**



A hand punching apparatus for translating information into a punched tape, comprising a base plate, a shaft secured to the base plate and carrying a plurality of coding disks stacked one above the other and each having information carrying notches and teeth cut along a peripheral portion thereof and a fine teeth segment along an opposite peripheral portion thereof to cooperate with a stop to fix a tooth in aligned position with a punch member, a lever attached to each coding disk for rotating each disk individually about the shaft when the stop is rendered inoperative, a plurality of punch members arranged in a matrix form and each line cooperating with the teeth of a disk so that a single disk will affect punching one line of holes in the tape, while a punching member extending into one of the notches will thereby be prevented from causing a perforation.

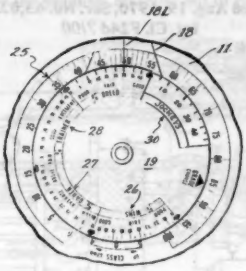
3,701,471

SPEED REGISTER

Jerome J. Kurland, 2725 W. Fitch Avenue, Chicago, Ill.

Division of Ser. No. 857,998, Sept. 15, 1969, Pat. No. 3,635,397, which is a division of Ser. No. 653,061, July 13, 1967, Pat. No. 3,473,731.
Filed Jan. 4, 1972, Ser. No. 215,344
Int. Cl. G06c *27/00*
U.S. Cl. 235—78 **3 Claims**

A speed register intended for thoroughbred racing (flat) is disclosed in a circular slide embodiment and in a straight slide embodiment. The circular slide has a base provided with an annular elapsed time scale and a set of corresponding speed readout scales spaced therealong according to individual race distances. The circular slide embodiment includes a set of rotary discs and cursors secured by a pair of eyelets to accommodate relative shifting movement. The straight slide embodiment includes a plurality of base scales each associated with common cursor elements, with the base scales being relatively shiftable to portray relative performance factors simultaneously with direct speed readouts. A pivoted base scale also enables conversion of past performance data between tracks having different speed characteristics.

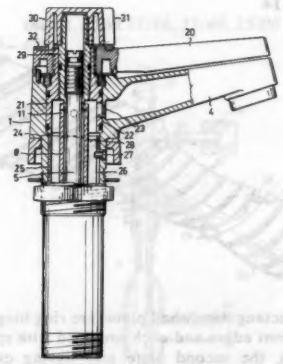


3,701,472

THERMOSTAT-CONTROLLED MIXING VALVE

Sven Emil Eklund, Gustavsberg, Sweden, assignor to AB Gustavsbergs Fabriker, Gustavsberg, Sweden

Filed Feb. 5, 1971, Ser. No. 112,915
Claims priority, application Sweden, Feb. 13, 1970, 1865/70
Int. Cl. G05d *23/13*
U.S. Cl. 236—12 R **4 Claims**

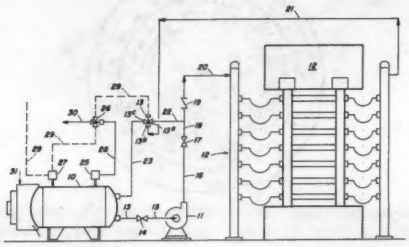


The invention concerns a thermostat-controlled mixing valve, especially hot and cold water mixers for sinks and sanitary installations, comprising a manually operated flow control at the outlet, separate hot and sold fluid valves at the inlet and rod shaped feeler members for each of said inlet valves enclosed within a common, surrounding housing traversed by the fluid, the feeler member being both of a material with a higher coefficient of expansion than the surrounding housing in which one of the feeler members is tubular and surrounds the other feeler member, the valve for the cold water inlet and the valve for the hot water inlet moving in opposite control directions at the expansion or contraction of the feeler members. The valve for the cold fluid is further adjusted to be still open when the valve for the hot fluid is closed. The valve for the hot fluid is further connected to the flow control so as to be kept closed when the flow control is closed. A temperature control member is provided for longitudinal displacement of the feeler member for the cold fluid and thereby of the cold fluid valve member relative to its seat.

3,701,473
HEATING SYSTEM

William M. Teller, Scarborough, N.Y., assignor to American Hydrotherm Corporation

Filed Aug. 19, 1970, Ser. No. 65,023
Int. Cl. F24d 7/00
U.S. Cl. 237—8 R 10 Claims

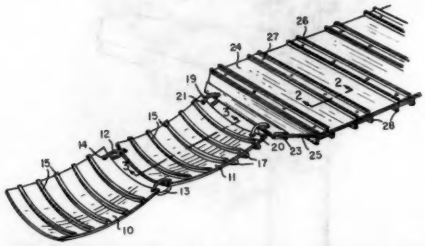


An industrial heating system, in particular a method and apparatus for intentionally or automatically shutting down a high temperature, high pressure fluid system for a user, such as a platen press, kettles, rolls, etc. where the user has a higher hydrostatic head than the fluid supply tank under non-operating conditions.

3,701,474
EMERGENCY TRACKAGE FOR VEHICLE WHEELS

Rudolf Welz, 122 Ethelbert Street, Winnipeg 10, Manitoba, Canada

Filed July 16, 1970, Ser. No. 55,457
Int. Cl. E01b 23/00; E01c 9/10
U.S. Cl. 238—14 1 Claim



A pair of rectangular dished plates are ring-hinged together at their adjacent edges and each provided with spaced upper cross battens, the second plate also having cross battens thereunder and being similarly hinged to a ground tread having spaced upper and lower cross bars; the first plate is placed in the ground and against the tire of a mired automobile wheel, and when the wheel is driven, it grips the battens to drag the plates thereunder until the plates and ground tread anchor at the ground opening formed by the rotating wheel, and so permit the wheel to ride in and up the track so formed.

3,701,475
APPARATUS FOR TREATING HUMAN HAIR

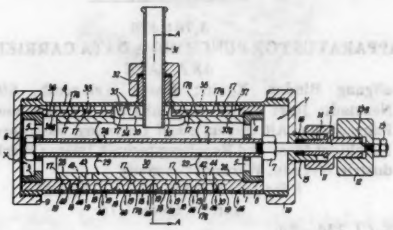
Michael John Neale, and Henry Edward Gotch, both of Herriard, England, assignors to Rene Andre Louis Moulard

Filed Aug. 31, 1970, Ser. No. 68,452
Int. Cl. B05b 1/14
U.S. Cl. 239—11 1 Claim

Means for controlling the outflow of two fluids having different physical and/or chemical characteristics, particularly hot and cold water for the treatment of hair, to provide discrete sprays of said fluids from an array of jet ports, which includes

a body member having two sets of fluid passages which are adapted to communicate respectively with sources of the two fluids under pressure;

a closure member slidably mounted relative to the body member and carrying the array of jet ports which are so located that, during relative sliding movement between

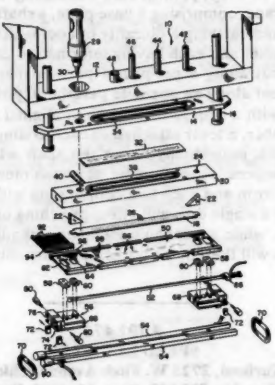


the closure member and body member, they simultaneously move sequentially into and out of communication with passages of the two sets alternately so that the two fluids can pass alternately through the jet ports to provide distinct and sequential impulses of the two fluids alternately.

3,701,476
DROP GENERATOR WITH ROTATABLE TRANSDUCER

Philip H. Houser, Chillicothe, Ohio, assignor to The Mead Corporation, Chillicothe, Ohio

Filed Oct. 14, 1971, Ser. No. 189,296
Int. Cl. B05b 3/14
U.S. Cl. 239—102 8 Claims



A drop generator in which a working fluid is forced through orifices in a flexible plate mounted on the drop generating head. The resulting filaments of working fluid break down into drops and the size and spacing of the drops are regulated by propagating a series of bending waves down the length of the orifice plate. The waves are propagated by means of an ultrasonic transducer mounted for rotation about its axis on the drop generator and directly contacting the orifice plate. Fine control over the exact point of contact between the tip of the transducer and the orifice plate is attained by forming the tip offset with respect to the axis of the transducer and rotating the transducer about its axis.

3,701,477

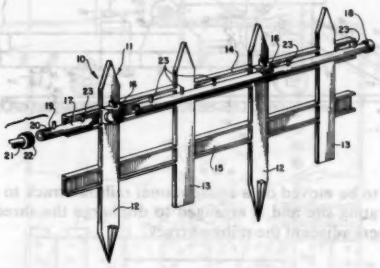
ELEVATED AND CONCEALED SPRINKLER SYSTEM

Alex Matt, 1595 North Calle LaCumbre, and Derek Brand, 2132 North Lynhurst Avenue, both of Camarillo, Calif.

Filed March 8, 1971, Ser. No. 121,703

Int. Cl. B05b 9/00

U.S. Cl. 239—276 11 Claims



A sprinkler system includes an upright support such as a fence and a flexible hose carrying multiple nozzles along its end-to-end length. The hose is removably held by the fence in an elevated position and is concealed from view against one side of the fence.

3,701,478

HAND SPRAYER

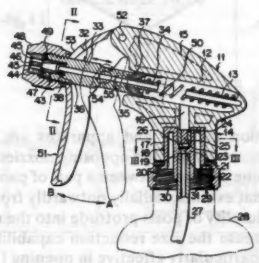
Tetsuya Tada, 2-6, 3-chome, Nishi-Nakanobu, Shinagawa-ku, Tokyo, Japan

Filed April 14, 1971, Ser. No. 133,870

Claims priority, application Japan, Oct. 8, 1970, 48/88101; Oct. 8, 1970, 45/88100

Int. Cl. B05b 1/32

U.S. Cl. 239—333 7 Claims



This sprayer essentially consists of a body having a cylinder and stock portion, a piston and a handle. The piston has a through passage integrally formed therein, a check valve consisting of a one-piece resilient element and spraying cartridge; resilient element with a recess, in which a spring seats, forms a piston ring preventing leakage, the spring providing a returning force for the piston after handle operation.

3,701,479

INJECTOR VALVE FOR GRANULAR MATERIALS

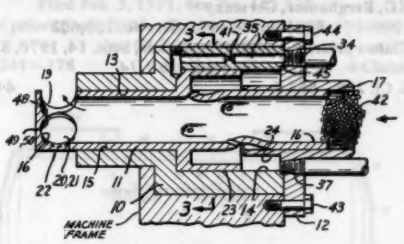
Robert J. Leslie, 3207 Olive Hill Road, Fallbrook, Calif.

Continuation-in-part of Ser. No. 860,325, Sept. 23, 1969, abandoned. This application March 18, 1971, Ser. No. 125,551

Int. Cl. B05b 7/12

U.S. Cl. 239—407 12 Claims

A valve for controlling the flow of granular material into die cavities for forming and molding of plastic materials. An example is the injection of styrene granules into a die where they will be expanded and bonded together to form a lightweight unitary contoured body. The valve includes a poppet with a central bore through which bore material is fed into the die cavity. The poppet is moved to its opened or closed position by air under pressure, and air which opens the poppet is also used to convey the granular material out of the bore and into



the die cavity. To improve distribution of the material in the die cavity, the exit end of the poppet bore is provided with a deflector section. Restrictor means may be provided in the air passages to the poppet to smooth out the opening and closing of the valve under the substantial air pressures and volumes required for actuation and injection.

3,701,480

APPARATUS AND PROCESS FOR ATOMIZING LIQUIDS, PARTICULARLY CARBON BLACK RAW MATERIALS

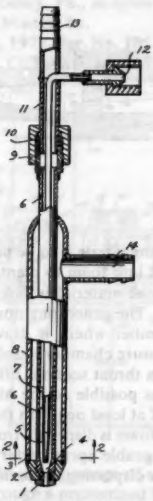
Gerhard Kuhner; Heinrich Sauer; Gerhard Jager, all of Grossauheim, and Gerhard Dusing, Wolfgang kreis Hanau, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt (Main), Germany

Continuation of Ser. No. 801,554, Feb. 24, 1969, abandoned. This application May 26, 1971, Ser. No. 147,248

Claims priority, application Germany, Feb. 22, 1968, P 16 25 206.5

Int. Cl. F23d 11/16, 13/40, 15/00

U.S. Cl. 239—420 7 Claims



There is provided an apparatus for atomizing a liquid by means of a gas comprising a nozzle at one end, a jacket pipe for gas contracting at said one end, a feed pipe for liquid arranged axially inside said jacket pipe and terminating therein as a constricted end, the length of both pipe ends in the axial direction being at most 10 times the inner diameter of the jacket tube. The apparatus is preferably used in the production of furnace blacks wherein the liquid hydrocarbon raw material is introduced into an atomizing stream of higher velocity and the dispersion is then separated into a reaction chamber.

3,701,481

BURNER PLATE, IN PARTICULAR FOR FORCED-DRAFT OILGAS OR GAS BURNERS

Horst Reichmann, Wuppertal-Elberfeld, and Gernot Rottmann, Lache, both of Germany, assignors to Joh. Vaillant KG, Berghauser, Germany

Filed July 6, 1971, Ser. No. 159,602
Claims priority, application Austria, Sept. 14, 1970, 8288
Int. Cl. B05b *1/14*
U.S. Cl. 239—553.5 **4 Claims**

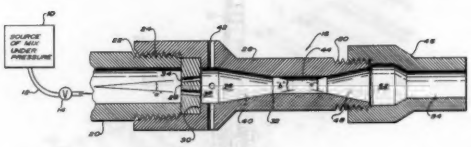
A blank to be coned into a burner plate for a forced draft burner has rows of openings extending thereacross. Strips are formed having a longitudinal rib with wings at each side of the rib. Each strip is positioned with its rib between a respective pair of rows of openings, and secured to the plate, with the wings projecting outwardly over said rows to form expansion chambers. The blank with the strips thereon is then coned.

3,701,482

FOAM GENERATING NOZZLE

Norman H. Sachnik, 1035 Columbia, Houston, Tex.

Filed March 17, 1971, Ser. No. 125,172
Int. Cl. B05b *1/14*
U.S. Cl. 239—590.3 **2 Claims**



A foam generating nozzle is to be used for applying treating material entrained into foam to plants. A mix of water, foam agent and treatment material is fed through a valve to the generating nozzle. The generating nozzle jets the liquid into a low pressure chamber where it draws air into it and from there, the low pressure chamber is isolated from the high pressure chamber by a throat section. Effort is made to conserve as much energy as possible so the high pressure section will have a pressure of at least one-fifth the pressure of the source of the liquid. The foam is dispersed from the high pressure section by interchangeable spray-pattern nozzles to obtain the desired pattern for dispersing the foam.

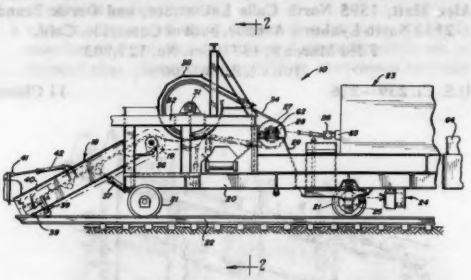
3,701,483

RAILROAD TIE SHREDDER

Robert C. Crosby, Knoxville, Tenn., and John D. Holley, Montgomery, Ala., assignors to The Marmon Group, Inc.

Filed Aug. 5, 1970, Ser. No. 61,245
Int. Cl. B02c *13/31*
U.S. Cl. 241—32 **25 Claims**

An apparatus for reducing wood elements such as railroad ties into preselected size shreds. The apparatus includes tearing means arranged for separating metal inclusions from the wood elements without substantially affecting the wood-tearing ability of the wood-tearing means. The apparatus is



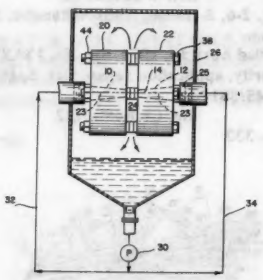
adapted to be moved on a conventional railroad track to a tie disintegrating site and is arranged to discharge the shredded wood fibers adjacent the railroad track.

3,701,484

APPARATUS AND PROCESS FOR SUSPENDING SOLIDS

Howard Gleason Donovan, Westfield, N.J., assignor to Johns-Manville Corporation, New York, N.Y.

Filed Nov. 20, 1970, Ser. No. 91,276
Int. Cl. B02c *19/06*
U.S. Cl. 241—5 **12 Claims**



A size reduction method and apparatus are provided in which a pair of coaxially aligned opposing nozzles impel liquid streams toward one another between a pair of panels that form a narrow zone that extends radially outwardly from the axis of the nozzles. A plurality of posts protrude into the narrow zone. These posts increase the size reduction capability of the apparatus and are particularly effective in opening (reducing the diameter of) fibers, such as asbestos, and reducing the particle size of particulate materials such as clay, pigments and the like.

3,701,485

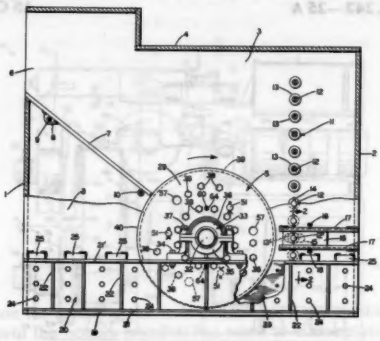
ROTOR CONSTRUCTION FOR IMPACT CRUSHER

Floyd E. Kimble, R. D. No. 1, Dover, Ohio, and Richard H. Buchsieb, Cambridge, Ohio, assignors to said Kimble, by said Buchsied, a part interest

Continuation of Ser. No. 764,675, Oct. 3, 1968, abandoned.
This application June 19, 1970, Ser. No. 47,659
Int. Cl. B02c *13/09, 13/26*
U.S. Cl. 241—32 **16 Claims**

An impact crusher having a rotor with hammers in the form of elongated breaker bars extending longitudinally of the rotor. Adjusting means provides for extending the breaker bars out tangentially to compensate for wear. The rotor comprises an end drive assembly at each end, a tube or shaft rotatably connected at its ends to the end drive assemblies, a plurality of spaced breaker support rings fixed upon the tube or shaft, the endmost breaker support rings being fixed to the correspond-

ing end drive assemblies. A plurality of open-ended tangential slots are formed in each breaker support ring. The breaker bars are located in said slots. Wedges, adjustably mounted in the inner enlargement of each slot, wedge the corresponding breaker bar against a breaker support bar located in the outer enlargement of each slot, firmly holding the breaker bar in adjusted position. Adjusting rings, rotatably mounted upon the tube, have peripheral lugs contacting the inner edges of the breaker bars. Adjusting screws threaded through rods located through the breaker bar support rings engage said lugs. Shear rods are located through registering apertures in the support rings and adjusting rings for holding the breaker bars in adjusted position.

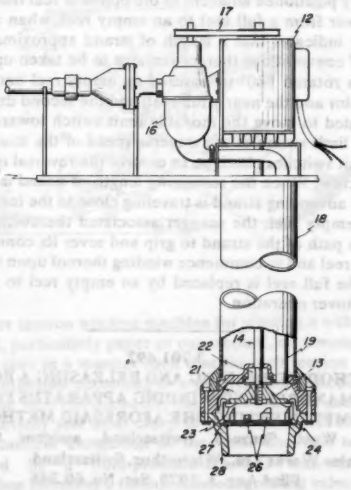


3,701,486

SNAGGING DEVICE FOR INVERTED GRINDER

Robert P. Farrell, Jr., Schenectady, N.Y., assignor to The United States of America as represented by the Secretary of the Interior

Filed Sept. 1, 1970, Ser. No. 68,691
Int. Cl. B02c *18/06*
U.S. Cl. 241—46.11 **2 Claims**



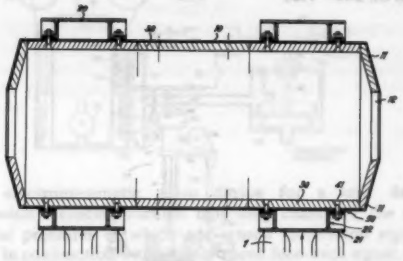
Improved inverted pump/grinder construction is presented herein. At least one sharp-edged protrusion is located below the impeller/shredder zone to interrupt the spinning motion of objects, which tend to become entangled on the impeller. This interruption by the protrusion renders such objects more readily subjected to the impeller/shredder action and thereby prevents formation of a large tangled mass.

3,701,487

ROTATABLE DRUM DEVICE

Guy Quesnel, 7, Parc Vatonne Yvette a, Gif 91, and Francis Feugere, 20, rue du General Leclerc, St-Remy-les-Chevreuses 78, both of France

Filed Feb. 3, 1971, Ser. No. 112,351
Claims priority, application France, Feb. 5, 1970, 7004090
Int. Cl. B02c *17/24*
U.S. Cl. 241—178 **6 Claims**



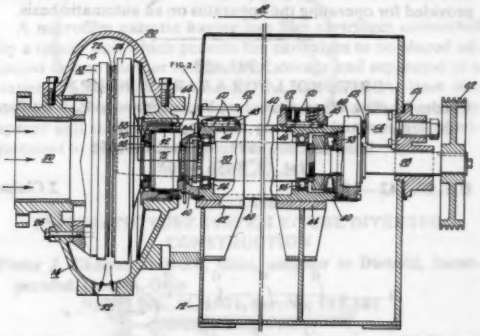
A rotatable drum device, such as ball mill or the like, including acylindrical drum having an internal lining, external hooks encompassing the periphery of the drum adjacent the ends thereof and adapted to be supported on and rotated by pneumatic tires. The tracks are fastened to the lining by suitable bolts or rivets passing through larger dimensioned apertures in the drum to permit relative lateral movement between the drum, the lining and the bolts or rivets. Flexible and malleable material may be interposed between the outer periphery of the drum and the radially innermost surfaces of the tracks to compensate for radial deformations.

3,701,488

PRESSURIZED REFINER SEAL ASSEMBLY

Chester Donald Fisher, Muncy, Pa., assignor to Sprout, Waldron & Company, Inc., Muncy, Pa.

Filed July 22, 1971, Ser. No. 165,211
Int. Cl. B02c *7/11*
U.S. Cl. 241—256 **13 Claims**

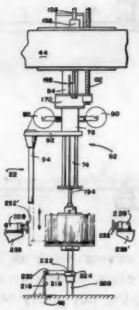


A seal assembly for sealing the passage of a rapidly rotating axially adjustable shaft through a pressurized housing containing particulate materials such as pulp fibers. The shaft is journaled within an axially adjustable quill disposed exteriorly of the housing. A quill extension surrounding the shaft is sealed for axial movement with respect to the housing by a packing gland. The rotating shaft is sealed with respect to the quill extension by a labyrinth seal and a mechanical seal having a pressurized liquid cooling system. Means are provided to permit a purging flow of the pressurized liquid into the labyrinth to prevent particulate material from reaching the mechanical seal, the pressurized cooling system liquid being at a higher pressure than the interior of the housing.

3,701,489
APPARATUS FOR WINDING FILAMENT ABOUT THREE AXES OF A MANDREL

William D. Goldsworthy, 2504 Novato Place, Palos Verdes Estates, Calif., and John A. Bunnell, 31186 Pedro St., South Laguna, Calif.

Continuation-in-part of Ser. No. 591,387, Oct. 18, 1966, abandoned, Continuation of Ser. No. 156,563, Nov. 29, 1961, abandoned. This application March 1, 1968, Ser. No. 709,676
Int. Cl. B65h *54/64*
U.S. Cl. 242—7.21 13 Claims

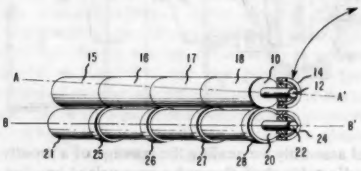


An apparatus and method for winding fiberglass filament about three axes of a substantially rectangular mandrel. Five basic methods are employed where the filament feeding head is rotatable and reciprocative with respect to the mandrel and where the mandrel is rotatable and reciprocative with respect to the filament feeding head. Similarly, one of the elements can be rotated and the other thereof can be reciprocatable. The winding apparatus includes a supporting table and a series of clamps which are designed to automatically shift and rotate the mandrel to the second and third axis positions for winding about the three axes of the mandrel. A second embodiment of the apparatus employs mandrel tables located at 90° planes with respect to each other. The mandrel tables serve as supports and also as clamping members for changing the position of the mandrel. A plug-in programming mechanism is also provided for operating the apparatus on an automatic basis.

3,701,490
DRIVE ROLL FOR A YARN WINDUP

Rhodes Ebeling Wray, Staunton, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 29, 1971, Ser. No. 110,961
Int. Cl. B65h *54/08*
U.S. Cl. 242—18 DD 2 Claims

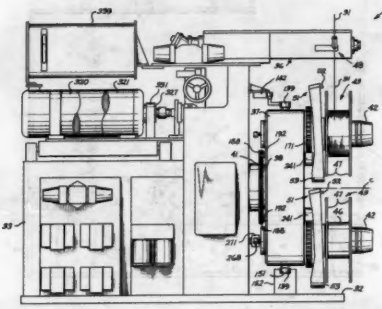


In an apparatus for high-speed winding of a plurality of threadlines on an equal number of separable yarn package supports on a common chuck, a drive roll for surface driving the yarn packages is provided with a novel arrangement of starting lands. The lands engage abutting ends of adjacent supports and there is another land at the inboard end of the roll. This arrangement functions to substantially eliminate axial bobbin movement which may occur when the axes of the chuck and the drive roll are warped out of parallelism.

3,701,491
METHODS OF AND APPARATUS FOR CONTINUOUSLY REELING STRAND MATERIAL

William Brownloe Brown, Pasadena, Md., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed June 7, 1971, Ser. No. 150,283
Int. Cl. B65h *54/02*
U.S. Cl. 242—25 A 18 Claims



A pair of transversely aligned arbors are rotatably cantilevered at opposite ends of a vertically disposed rotatable turret. Each arbor is provided with a plurality of internally floating, cam-operated mechanisms for locking a take-up reel thereon. Independent drive mechanisms drive the reels separately at varying speeds. A snagger device is cantedly mounted on the cantilevered end of each arbor for rotation therewith and extends a radial distance slightly greater than the adjacent flange of the reel thereon to oscillate between two points coplanar with respect to the inner and outer surfaces of the flange, respectively. A distributor adjacent to one of the reels actively taking up the strand is provided with a reversible drive screw for driving a traversable strand guide controlled alternately by a stationary limit switch adjacent to the reel flange associated with the snagger and a rectilinearly movable limit switch mounted on a second drive screw and normally positioned adjacent to the opposite reel flange. Prior to cutover from a full reel to an empty reel, when a footage counter indicates that a length of strand approximating one layer of convolutions thereof remains to be taken up: (a) the turret is rotated 180° to position an empty reel between the distributor and the nearly full reel; and the second drive screw is actuated to move the movable limit switch toward the stationary limit switch at the traverse speed of the strand guide. The limit switches continue to control the reversal of the first drive screw. When the remaining length of strand is taken up and the advancing strand is traveling close to the inside flange of the empty reel, the snagger associated therewith is thrust into the path of the strand to grip and sever its connection to the full reel and to commence winding thereof upon the empty reel. The full reel is replaced by an empty reel to await the next cutover operation.

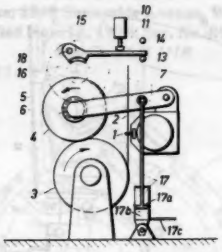
3,701,492
METHOD OF BRAKING AND RELEASING A BOBBIN MANDREL AND WINDING APPARATUS FOR IMPLEMENTING THE AFORESAID METHOD

Olivier Wust, Seuzach, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed Aug. 3, 1970, Ser. No. 60,346
Claims priority, application Switzerland, Aug. 12, 1969, 12446/69
Int. Cl. B65h *63/08*
U.S. Cl. 242—39 6 Claims

A method and apparatus for braking a bobbin mandrel supported on a pivotable arm and for releasing a full bobbin formed on a bobbin tube fixed on said bobbin mandrel of a yarn winding apparatus, which contemplates pivoting the bob-

bin mandrel against a brake lever mounted to be pivotable about a fixed axis to assume either a first position for braking the bobbin mandrel or a second position for actuating a switching function to release the bobbin tube from the bobbin mandrel. A braking force component is generated which acts against the braking lever to prevent such braking lever from pivoting into the second position for activating a switching



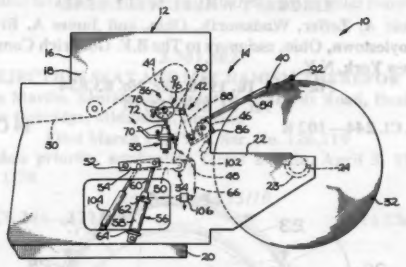
function for releasing the bobbin tube from the bobbin mandrel until the bobbin mandrel has come to a complete standstill. After the bobbin mandrel has been braked and comes to a complete standstill, a force is applied to the braking lever which causes it to pivot into the second position for activating the switching function to release the bobbin tube from the bobbin mandrel.

3,701,493

TAPER TENSION WEB WINDING MACHINE

Bernhard J. Welsch, Downey, and James A. Schafer, Stanton, both of Calif., assignors to Western Gear Corporaton, Lynwood, Calif.

Filed Sept. 14, 1970, Ser. No. 71,821
Int. Cl. B65h *25/22, 25/04*
U.S. Cl. 242—75.53 **11 Claims**



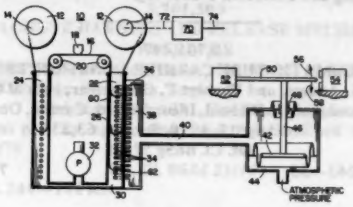
A taper tension winding machine for winding a web of sheet material, particularly paper or paperboard, on a motor driven take-up core in a manner such that the web tension progressively diminishes according to a programmed function of the increasing web roll diameter, i.e., taper ratio, to prevent circumferentially and axial creep of the inner layers of the roll and permanent elongation of the web. The web tension is regulated by a fluid-pressure-actuated web tensioning mechanism including a fluid pressure regulating valve which is progressively adjusted in relation to the increasing roll diameter to vary the fluid pressure to the tensioning mechanism in such a manner as to achieve the programmed taper ratio. The web roll drive motor may also be regulated to increase the DC electrical motor speed range and reduce the DC motor torque at the beginning of a new rewind roll to permit the use of a relatively small motor. A taper tension control for the winding machine.

3,701,494

ELECTROPNEUMATICALLY CONTROLLED SERVO FOR TAPE MECHANISM

George G. Proulx, Bedford, Mass., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed April 20, 1970, Ser. No. 29,938
Int. Cl. B65h *59/00*
U.S. Cl. 242—184 **15 Claims**



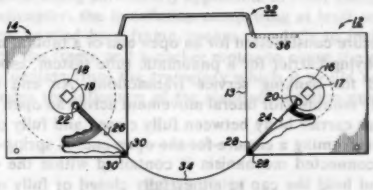
An electropneumatic servo device for a tape drive mechanism including vacuum tape loop chambers, the differential pressures of which are sensed to develop signals which, in conjunction with a motor speed feed-back signal, are used to drive the reel motors of the tape drive.

3,701,495

EXPANDABLE CASSETTE

Robert G. Holliday, Ann Arbor, Mich., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 10, 1970, Ser. No. 62,395
Int. Cl. G11b *23/10*
U.S. Cl. 242—197 **14 Claims**



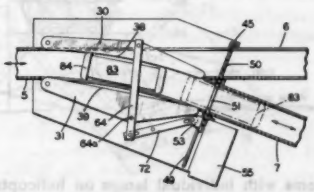
A microfilm cassette having two film cartridges connected by a spacer unit which permits the cartridges to be placed adjacent to one another for compact storage and separated to a variety of distances for viewing the microfilm. At least one edge of each cartridge contains a keyway in which a leg of the spacer unit slides relative to the cartridge to provide easy adjustment to the distance desired between the cartridges.

3,701,496

PNEUMATIC TUBE SYSTEM Y-TUBE DIVERTER CONSTRUCTION

Pieter J. Ekama, Malvern, Ohio, assignor to Diebold, Incorporated, Canton, Ohio

Filed Feb. 16, 1971, Ser. No. 115,181
Int. Cl. B65g *51/24*
U.S. Cl. 243—29 **14 Claims**



A Y-tube diverter construction for multiple station pneumatic tube systems. A Y-tube section having a main and two

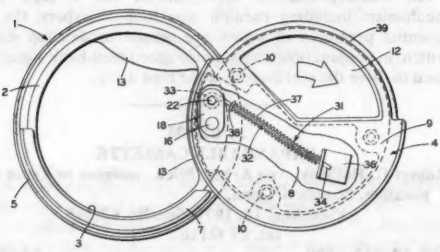
branch legs is mounted within an airtight housing and is provided with a pair of slots throughout the tube section main and branch legs. A pair of guide members alternately extend through the slots and provide connecting portions between the main leg and one of the branch legs. A slide plate alternately diverts the air flow between the main leg and a selected branch leg, which, in cooperation with the guide members, enables a carrier to travel in either direction through the main diverter leg and a selected branch leg.

3,701,497

PNEUMATIC TUBE CARRIER CONSTRUCTION

Walter G. Anders, and Herbert C. Obermiller, both of Canton, Ohio, assignors to Diebold, Incorporated, Canton, Ohio

Filed Aug. 12, 1970, Ser. No. 63,233
Int. Cl. B65g *51/06*
U.S. Cl. 243—35 **7 Claims**



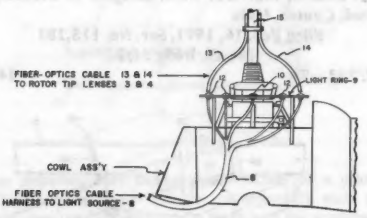
A closure construction for an open end of a tubular material-conveying carrier for a pneumatic tube system, especially adapted for banking service transactions. An end cap is pivotally mounted for lateral movement across an open end of a tubular carrier body between fully closed and fully opened positions forming a closure for the open end. A spring-biased toggle-connected mechanism is contained within the cap to urge and hold the cap in either fully closed or fully opened position.

3,701,498

FIBEROPTIC CLEARANCE LIGHT SYSTEM

Peter B. Ferrara, Bel Air, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed June 3, 1971, Ser. No. 149,420
Int. Cl. B64c *27/00*
U.S. Cl. 244—17.11 **6 Claims**



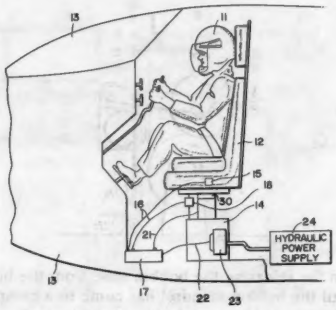
Problems with individual lamps on helicopter blades are minimized by use of a single source of white light and fiberoptic cables to pipe the light together with colored lenses (e.g. red for port and green for starboard).

3,701,499

ACTIVE FLUID ISOLATION SYSTEM

Dale W. Schubert, Sudbury, and Frederick D. Ezekiel, Lexington, both of Mass., assignors to Barry Wright Corporation, Watertown, Mass.

Filed April 8, 1968, Ser. No. 719,472
Int. Cl. B64c *27/04*
U.S. Cl. 244—17.27 **21 Claims**



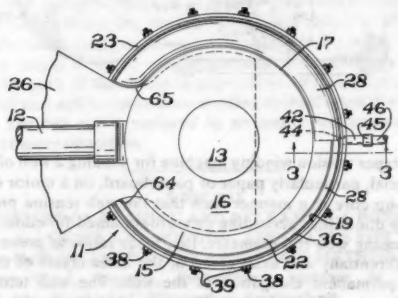
A body to be stabilized, such as an aircraft pilot seat includes means, such as an accelerometer, for providing an acceleration signal representative of the acceleration of the body. This acceleration signal is used to control the action of a servovalve-controlled hydraulic actuator, to reduce the force applied to the body tending to reduce the acceleration sensed by the accelerometer to a substantially zero value. There is also a position transducer for providing a signal representative of the displacement of the body relative to the supporting structure position to provide a displacement control signal that controls the actuator so that the mass position is normally in a predetermined rest position, typically at the hydraulic actuator midposition.

3,701,500

AIRCRAFT WHEEL WELL SEAL

Arthur A. Zeffer, Wadsworth, Ohio, and James A. Briscoe, Doylestown, Ohio, assignors to The B.F. Goodrich Company, New York, N.Y.

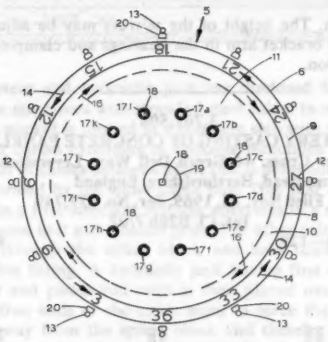
Filed Oct. 16, 1970, Ser. No. 63,834
Int. Cl. B64c *25/16*
U.S. Cl. 244—103 R **14 Claims**



An annular inflatable seal of resilient elastomeric material with the radially outer wall mounted in the wheel well and the radially inner wall spaced from the tire in the deflated condition. The walls of the seal are stretched during inflation so as to decrease the circumferential length of the radially inner wall and provide a wrinkle-free surface in engagement with the tire. Reinforcing cords are embedded in the seal to strengthen and control the stretching and contraction of the

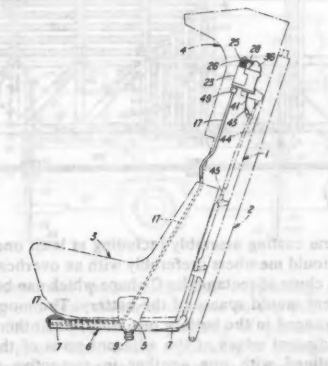
walls during inflation and deflation of the seal. The radially outer wall is attached to the wheel well in an area spaced from the edge of the seal to permit the edge portion to move radially inward during inflation and provide for increased radial movement of the radially inner wall.

3,701,501
AIRPORT DESIGN
Robert G. Scelze, 1848 Sunnyside Avenue, Westchester, Ill.
Filed Nov. 16, 1970, Ser. No. 89,908
Int. Cl. B64f *1/18*
U.S. Cl. 244—114 R **7 Claims**



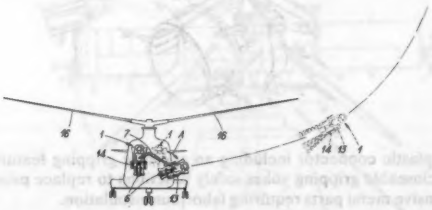
An aircraft landing and take-off facility having a center area and two circular runways surrounding the center area. Two series of indicia visible to an approaching aircraft are provided for indicating straight runways in a plurality of compass directions in which an aircraft should take off or land in accordance with prevailing wind directions. The take-off or acceleration run of the aircraft is initiated on one of the circular runways with flying speed attained on one of the straight runways. Landing of the aircraft is initiated on a straight runway with deceleration accomplished on the same circular runway.

3,701,502
EJECTION SEAT AND MECHANISM THEREFOR
James Martin, Southlands Manor, Southlands Road, Denham near Uxbridge, Middlesex, England
Filed March 19, 1971, Ser. No. 126,119
Claims priority, application Great Britain, April 3, 1970, 16,011/70
Int. Cl. B64d *25/10*
U.S. Cl. 244—122 AD **11 Claims**



The invention concerns initiator mechanism for ejection seats (and seats provided therewith) such initiator mechanisms being provided for a rocket motor provided on an ejection seat pan which is movable with respect to a seat frame, the initiator being provided on the frame and comprising a pressure fluid source which when initiated in response to withdrawal of a static line stored in a housing on the frame, releases pressure fluid which is transmitted by conduit means to a rocket motor firing pin remote from the source.

3,701,503
PARACHUTE HARNESS AND RELEASE MECHANISM THEREFOR
James Martin, Southlands Manor, Southlands Road, Denham, near Uxbridge, Middlesex, England
Filed March 22, 1971, Ser. No. 126,614
Claims priority, application Great Britain, April 16, 1970, 18,238/70
Int. Cl. B64d *25/10*
U.S. Cl. 244—122 AD **6 Claims**

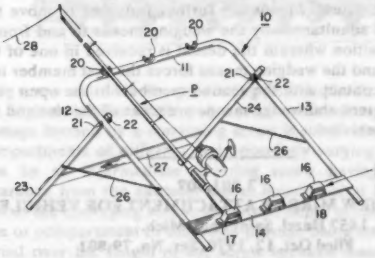


The invention concerns an ejection seat escape installation for providing escape from a vehicle where it is not possible to provide an escape opening directly above an ejection seat, the installation being particularly applicable to rotor aircraft such as a helicopter, the installation comprising at least one ejection seat carried by a frame, means angularly to incline the seat and the frame and a rocket motor to cause the ejection seat to deviate from the trajectory which it would normally take under the influence of the standard ejection gun of the seat.

ERRATUM

For Class 248—204 see:
Patent No. 3,701,610

3,701,504
FISHING POLE RACK
Virgle L. Woods, 12709 Irvington Avenue, and LaVerne Readus, 759 Thornhill Drive, both of Cleveland, Ohio
Filed March 15, 1971, Ser. No. 124,072
Int. Cl. A01k *97/10*
U.S. Cl. 248—39 **6 Claims**



An improved rack of simplified structure is provided for supporting a series of fishing poles and the like. The rack com-

prises an inverted, U-shaped frame which is collapsible with respect to leg members and readily portable and storable. The frame has supports for a pole or rod which are designed to anchor the butt end of poles to the frame and prevent their loss, as by a strike by a fish, and yet which enable the poles to be immediately removed from the rack by a fisherman without loss of time to insure hooking a fish or playing a sporting fish after a strike.

3,701,505

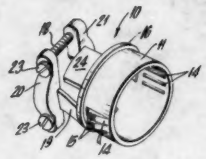
CABLE CONNECTOR

Ferdinand Klumpp, Jr., Mountainside, N.J., assignor to Heyman Manufacturing Company, Kenilworth, N.J.

Filed Nov. 23, 1970, Ser. No. 91,923

Int. Cl. F16l 5/00

U.S. Cl. 248—56 **8 Claims**



A plastic connector including an aperture gripping feature and closeable gripping yokes safely functions to replace prior expensive metal parts requiring laborious installation.

3,701,506

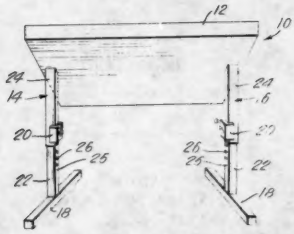
ADJUSTABLE FURNITURE LEG

Marcel Favreau, Cowansville, Quebec, Canada, assignor to Vilas Industries Limited, Cowansville, Quebec, Canada

Continuation-in-part of Ser. No. 15,332, March 2, 1970, abandoned. This application June 28, 1971, Ser. No. 157,292

Int. Cl. A47b 13/00

U.S. Cl. 248—188.5 **5 Claims**



A leg structure formed by a pair of telescoping leg members, one of which is provided with a plurality of spaced apertures. A retractable detent is associated with the other leg member. Movable wedging means are associated with the retractable detent. Means are further provided to move the detent and simultaneously the wedging means to and from a locking position wherein the detent is received in one of the apertures and the wedging means forces the first member into frictional contact with the second member. In the open position the detent and wedge means are clear of the slot and the first member.

3,701,507

REAR VIEW MIRROR ATTACHMENT FOR VEHICLES

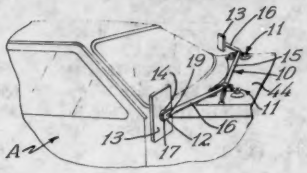
Lee J. Bell, 1457 Hazel, Saint Paul, Mich.

Filed Oct. 12, 1970, Ser. No. 79,801

Int. Cl. B60r 1/06

U.S. Cl. 248—467 **3 Claims**

An elongated bracket arm is supported in an pair of bearing brackets including bearings are mounted near opposite sides of a vehicle hood. The ends of the bracket arms are angularly bent relative to the axis of the bearing supported central position, and mirrors are adjustably supported at the ends of the



bracket arm. The height of the mirrors may be adjusted by rotating the bracket arm in the bearings and clamping in adjusted position.

3,701,508

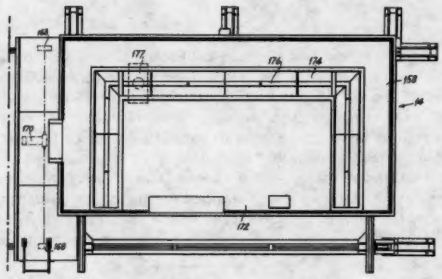
BATTERY CASTING OF CONCRETE PANELS

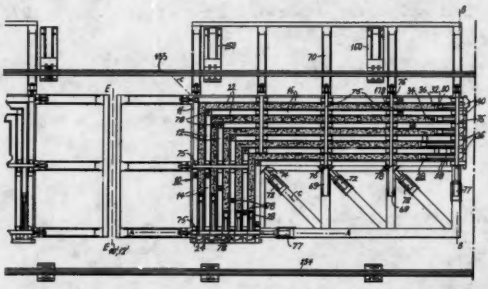
Walter Peter Cross, 44 Green Dell Way, Leverstock Green, Hemel Hempstead, Hertfordshire, England

Filed Nov. 18, 1969, Ser. No. 877,749

Int. Cl. B28b 7/02

U.S. Cl. 249—129 **6 Claims**



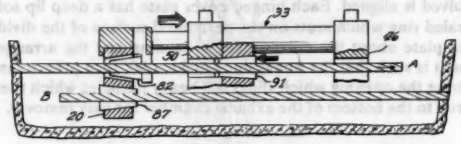


A concrete casting assembly including at least one battery of L-type mould members preferably with an overhead gantry providing a chute of rectangular C-shape which can be located over different mould spaces of the battery. The mould members are arranged in the battery one within the other so as to have the adjacent edges of the adjacent arms of the mould members alined with one another in respective mutually orthogonal planes each inclined by an angle of 45° to the plane containing the corner edges of the mould members. The mould members are preferably of steel construction.

3,701,509
SPLICING SYSTEM AND JACK FOR STRESSING CONCRETE

Frederick M. Stinton, R.R. No. 2, Woodbridge, Ontario, Canada

Filed May 6, 1970, Ser. No. 35,168
Int. Cl. E04g 21/12
U.S. Cl. 254—29 A **12 Claims**

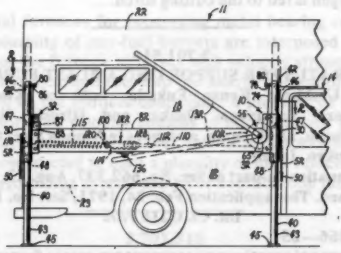


A system and hydraulic jack are disclosed for stressing concrete structures with stranded steel cable. In one embodiment, a pocket is formed in a concrete slab with two pairs of stranded cables extending in opposite directions in the slab. Each pair of cables defines a plane that is perpendicular to the plane formed by the other cable pair. One pair of cables is passed in a first direction through apertures in a splice block and secured to it with conical grips. The other pair of cables is passed through the splice block and held releasably by a removable fitting. A hydraulic jack having first and second cylinder and piston rod units is then placed over the overlapped free ends of the cable pairs to force the temporary fitting away from the splice block and thereby tension the cable pairs against each other when the cylinder and piston rod units are expanded. The jack straddles the tensioned cables and is supported solely by the cables once suitable tension is achieved to bear the weight of the jack. A second pair of conical grips is located adjacent the splice block on the pair of cables held by the temporary fitting so that when the pressure is released in the jack, the second pair of grips are seated into the splice block to secure that cable pair and complete the stressing splice. Additional tension may be achieved by contracting the jack and taking a new grip on the free ends of the second pair of cables. Since the jack straddles the tensioned cables it is easily removed or placed into operative engagement with the cable pairs by lifting.

3,701,510
ELEVATIONAL POSITIONING AND SUPPORTING DEVICE

James Rollin Logan, 2229 Logan Court, Modesto, Calif.

Filed Sept. 14, 1970, Ser. No. 72,017
Int. Cl. B66f 7/26
U.S. Cl. 254—47 **3 Claims**

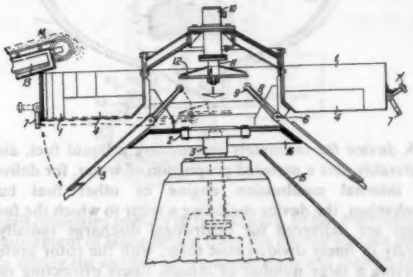


An elevational positioning and supporting device for mounting and demounting a camper on the bed of a pickup truck or the like providing a plurality of spaced substantially upright support legs having a plurality of elongated flexible tension members suspended therefrom in supporting relation to the camper with actuating means on the camper engageable with the tension members to vary their effective lengths slidably to raise and lower the camper on the support legs and counterbalancing means operably associated with the actuating means to overcome the force of gravity acting upon the camper to maintain it in any desired elevational position on the support legs throughout its entire range of movement thereon.

3,701,511
APPARATUS FOR THE MIXING AND DISTRIBUTION OF GRANULATED MATERIALS

Angelo Teodoro Manara, Breno, Italy, assignor to Carlo Tassara S.p.A. Stabilimenti Elettrosiderurgici, Breno Brescia, Italy

Filed Sept. 8, 1970, Ser. No. 70,107
Claims priority, application Italy, Sept. 30, 1969, 22726A/69
Int. Cl. B01f 9/10
U.S. Cl. 259—3 **10 Claims**

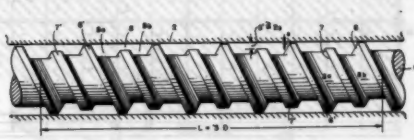


An apparatus for the mixing and distribution of different granulated materials, particularly fit for mixing the components of the charge in the iron and steel industry, comprising a cylindrical container for the mixed material, said container being divided in a plurality of peripherally distributed cells, means being provided for imparting a relative rotational movement between the container and the feeder.

3,701,512
SCREW EXTRUDER FOR PROCESSING THERMOPLASTIC MATERIALS

Heinz Schippers; Friedhelm Hensen, and Erich Lenk, all of Remscheid-11, Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed April 7, 1971, Ser. No. 132,064
Claims priority, application Germany, April 13, 1970, P 20 17 580.8
Int. Cl. B29b 1/10
U.S. Cl. 259—191 **12 Claims**

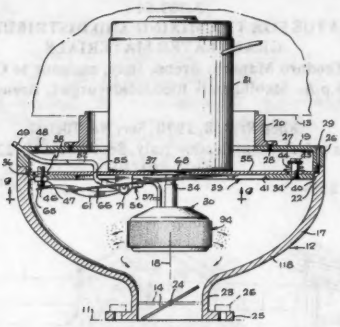


A screw extruder for processing thermoplastic materials, e.g. high molecular weight polymers, in which the spiral worm passage formed by a conveying screw is subdivided into two compartments of different and oppositely varying cross-section by an intermediate shearing screw having a radial clearance from the extruder barrel housing of at least twice that of the conveying screw, the thread depth in each subdivision or compartment of the worm passage being continuously varied over the length of the screw between maximum and minimum values, thereby causing a predetermined flow of thermoplastic material across the flight land of the shearing screw.

3,701,513
FUEL FEEDING APPARATUS

Shirley J. Carter, 7339 Petrol Ave., Bellflower, Calif.

Continuation-in-part of Ser. No. 772,551, Nov. 1, 1968, abandoned. This application July 21, 1970, Ser. No. 56,964
Int. Cl. F02m 9/12
U.S. Cl. 261—18 A **2 Claims**

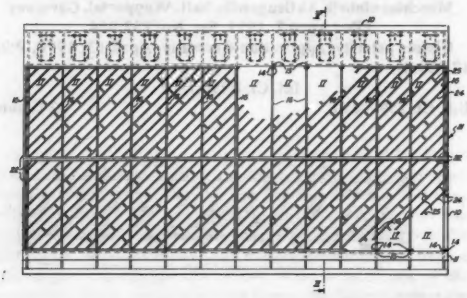


A device for intimately intermixing a liquid fuel, air, and preferably also a metered proportion of water, for delivery to an internal combustion engine or other fuel burning mechanism, the device including a rotor to which the fuel and water are delivered for centrifugal discharge radially outwardly in finely divided mist form, with the rotor preferably carrying a large number of minute fibers projecting radially outwardly and along which the liquids flow in a manner subdividing the liquids into minute droplets. The rate of delivery of the fuel and water is regulated in accordance with the rate of flow of air through the device, and by a control structure actuable by the air.

3,701,514
BURNING TABLE AND EXHAUST SYSTEM THEREFOR

Joseph J. Walters, and Verdun R. McGibbon, both of Coatesville, Pa., assignors to Lukens Steel Company, Coatesville, Pa.

Filed Nov. 12, 1970, Ser. No. 88,876
Int. Cl. F27d 17/00
U.S. Cl. 266—15 **18 Claims**

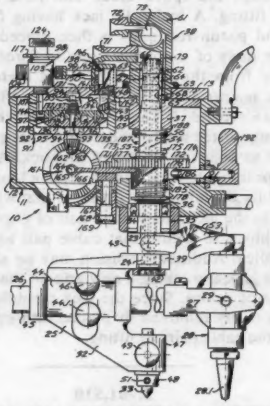


The combination of a table for cutting steel plate and an exhaust system for evacuating the fumes and smoke produced by the cutting operation. The expendable grating of the cutting table utilizes bars which are diagonal to the usual cutting directions and are connected by staggered stiffening bars also diagonally located so that the bars are not normally cut along their longitudinal axis. Duct work under the grating comprises heavy vertically extending removable plates resting on edge which additionally provide support for the grating and lead to an elongated exhaust manifold channel having a plurality of openings and a normally closed plate covering each of such openings. The openings are disposed in a horizontal dividing plate and communicate with the space formed between each of the vertically extending plates making up the ductwork under the grating. The cover plates are hinged and raised from a horizontal position by a pneumatic cylinder actuated through a photoelectric cell which is responsive to light from plasma of the cutting torch. The photoelectric cell further actuates adjacent cover plates on either side of the cover plate which corresponds to the duct that the photoelectric cell involved is aligned. Each hinged cover plate has a deep lip soft sealed ring which seats on the peripheral surface of the dividing plate about the corresponding opening and the arrangement is such that the fumes must make a 90° turn prior to entering the opening which slings out heavy particles which then drop to the bottom of the exhaust chamber for easy removal.

3,701,515
PORTABLE CUTTING TORCH APPARATUS

William J. Field, New Westminster, British Columbia, Canada, assignor to Fields Industrial Research (1971) Ltd, Vancouver, British Columbia, Canada

Filed June 7, 1971, Ser. No. 150,582
Int. Cl. B23k 7/02
U.S. Cl. 266—23 K **7 Claims**



A portable cutting torch apparatus having a casing adapted to be supported over a work piece, the casing having a vertical spindle mounted for rotation therein and through which fuel gasses are fed under pressure to a cutting torch connected at a lower end of but off-set from the spindle axis. A motor driven by oxygen is connected to the spindle for rotating the latter when oxygen is fed to the cutting torch.

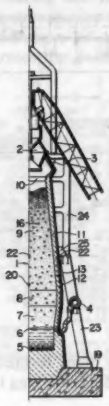
3,701,516
APPARATUS FOR SUPPORTING A BLAST FURNACE

Kumao Ueshima; Kenzo Fukada, both of Kitakyushu; Masakazu Yoshinaga, Osaka, and Hiroshi Nakazona, Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 662,337, Aug. 22, 1967, abandoned. This application Feb. 24, 1971, Ser. No. 118,349
Int. Cl. C21b 7/00
U.S. Cl. 266—25 **5 Claims**

The present invention relates to an apparatus for supporting the furnace body of a blast furnace. Said apparatus is characterized by supporting the furnace body near the middle part of its shaft above the center of gravity of the furnace body; more in detail, it is so constructed as to support the furnace body with a supporting member provided around the shell of the shaft above the center of gravity of the furnace body so as to support the refractory lining of the furnace body, with a plurality of struts set on the foundation so as to support said sup-

porting member, and with a plurality of supporting stands adjustable in height each placed between each of said struts and



said supporting member, and also as to support the top unit of the furnace with a plurality of columns supported by said struts.

3,701,517

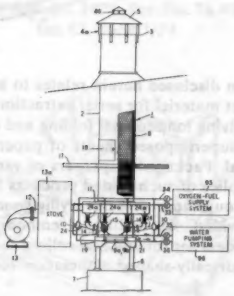
OXY-FUEL BURNERS IN FURNACE TUYERES

Bronis G. Gray, Orange, N.J., assignor to Airco, Inc., New York, N.Y.

Division of Ser. No. 602,381, Dec. 16, 1966, Pat. No. 3,547,624. This application Aug. 7, 1970, Ser. No. 62,180

Int. Cl. F27d *23/00*

U.S. Cl. 266—29 **8 Claims**



Industrial furnaces for processing metal bearing charge in which a plurality of oxy-fuel burners are interposed through the walls of the furnace to direct high velocity streams of oxygen and hydrocarbon fuel into the hearth portion of the furnace. Each of the burners comprising a plurality of separate channels for high velocity streams of commercially pure oxygen and hydrocarbon fluid fuel, said channels terminating in a nozzle constructed to emit a plurality of high velocity jets of oxygen surrounding at least one jet of hydrocarbon fuel.

3,701,518

OXYGEN LANCE CONTROL ARRANGEMENT FOR BASIC OXYGEN FURNACE

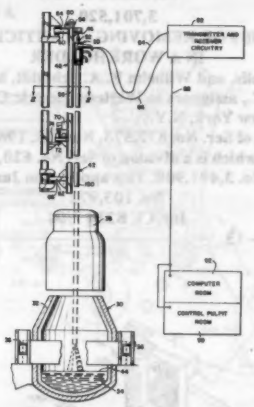
Louis M. Herff, Pittsburgh, Pa., assignor to Berry Metal Company, Harmony, Pa.

Filed Oct. 3, 1969, Ser. No. 863,609

Int. Cl. C21c *7/00*

U.S. Cl. 266—34 LM **16 Claims**

A ranging radar system is employed in combination with the oxygen blowing lance of a basic oxygen furnace to make an absolute measurement of the distance between the lance and the level of molten material within the furnace vessel. This measurement may be made while the level of molten material is quiescent, i.e., before the oxygen blowing operation is started, and may be used either to calibrate the existing lance drum indicator or directly as a measurement of lance height in



the overall computer control of the furnace. In the alternative, the measurement of lance height from the molten surface may be made during the oxygen blowing operation and may be employed for accurate lance positioning during blow or the accurate repositioning of the lance in the event a reblow operation is required to obtain a desired quality of steel for a particular heat.

3,701,519

APPARATUS FOR THE CONTINUOUS REFINING OF METALS

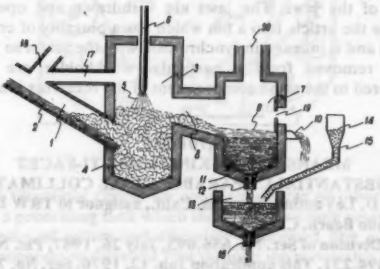
Pierre Vayssiere, Metz Queuleu, France, and Juan Kindelan Y Gomez De Bonilla, Madrid, Spain, assignors to Institut de Recherches de la Siderurgie Francaise, Saint Germain-en-Laye, France

Division of Ser. No. 698,046, Jan. 15, 1968, Pat. No. 3,565,605, which is a continuation of Ser. No. 431,427, Feb. 9, 1965, abandoned. This application Oct. 21, 1970, Ser. No. 82,604

Claims priority, application France, Feb. 14, 1964, 64963736; Oct. 12, 1964, 64991114; Oct. 12, 1964, 649911116; Oct. 23, 1964, 64992419; Nov. 26, 1964, 64996437

Int. Cl. C21c *7/00*

U.S. Cl. 266—34 R **5 Claims**



An arrangement for the continuous refining of metal, especially pig iron. This arrangement comprises a refining reactor, a decantation vessel, means for feeding at a first level liquid metal containing slag forming impurities into the reactor and

discharging means located at the second level which is higher than the first level for discharging material from the reactor into the decantation vessel. The arrangement also includes means for blowing a refining gas into the reactor so as to form a metal-slag foam which passes through the discharging means into the decantation vessel.

3,701,520

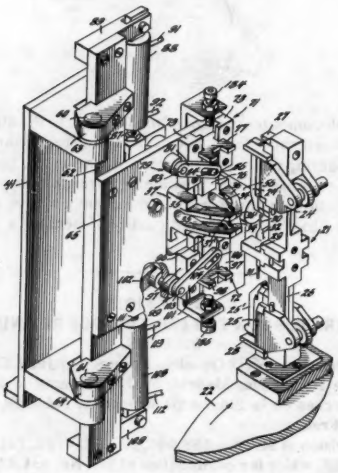
APPARATUS FOR REMOVING AN ARTICLE CLAMPED IN A WORKHOLDER

Samuel Pinnolis, and Wilhelm E. A. Schmidt, both of Winston-Salem, N.C., assignors to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 877,573, Nov. 26, 1969, Pat. No. 3,586,179, which is a division of Ser. No. 620,318, March 3, 1967, Pat. No. 3,491,900. This application Jan. 5, 1971, Ser. No. 103,972

Int. Cl. B23q 7/04

U.S. Cl. 269—13 **1 Claim**



An apparatus opens clamping jaws on workholders mounted on a turret and then unloads articles held by resilient clamps on the workholder. A pair of open jaws are moved about an article held in a workholder and then closed while spring members bear against the article urging it against inner faces of the jaws. The jaws are withdrawn and opened to release the article into a bin which has a plurality of compartments and is indexed in synchronism with the turret so that articles removed from a particular workholder are always delivered to the same compartment of the receiving bin.

3,701,521

MEANS FOR MAKING A MULTI-FACET SUBSTANTIALLY PARABOLOIDAL COLLIMATOR

Allan D. LeVantine, Tarzana, Calif., assignor to TRW Inc., Redondo Beach, Calif.

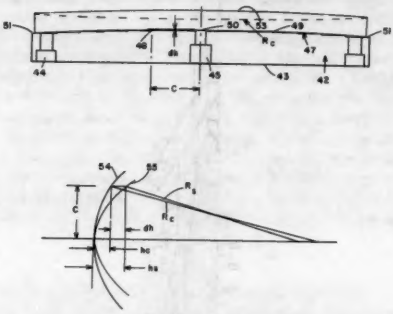
Division of Ser. No. 656,093, July 26, 1967, Pat. No. 3,494,231. This application Jan. 12, 1970, Ser. No. 7,306

Int. Cl. B23q 3/18; B25b 11/02; B23p 21/00

U.S. Cl. 269—48 **1 Claim**

A light reflecting collimator having a substantially paraboloidal surface and being formed of a plurality of juxtaposed facets each having a substantially paraboloidal surface.

A method for making such a collimator of a plurality of facets each having a substantially paraboloidal surface on individual plates and each facet formed on each plate being defined by two paraboloidal radii lying in orthogonal planes.



3,701,522

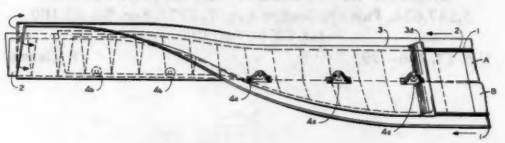
PROCESS FOR FOLDING SHEET MATERIAL AND PACKAGED DISPENSERS THEREFOR

Tzu-Chiang Chi, New York, N.Y., assignor to William I. Andress, Kirkwood, Mo., a part interest

Filed Aug. 15, 1969, Ser. No. 850,453

Int. Cl. B41l 1/32

U.S. Cl. 270—39 **12 Claims**



The invention disclosed herein relates to a unique method for folding sheet material for serial extraction from packaged dispensers involving longitudinal folding and a series of transverse folds of superimposed sheets of paper, cloth or other flexible material. Packaged dispensers of various shapes and containing supplies of such folded products for serial extraction thereof through apertures of varying geometrical configuration are provided. An additional embodiment involves a continuous process for folding and rolling sheet material into generally cylindrically-shaped association for packaging and dispensing.

3,701,523

MONEY-HANDLING DEVICE

Gustav F. Erickson, Hot Springs, Ark., assignor to U.M.C. Industries, Inc., St. Louis, Mo.

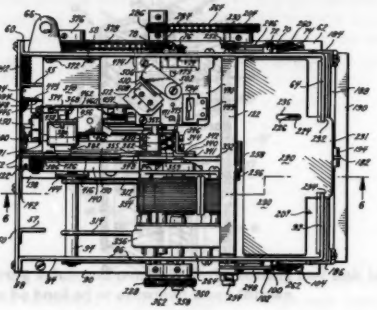
Filed July 16, 1970, Ser. No. 55,501

Int. Cl. B65h 45/18

U.S. Cl. 270—67 **21 Claims**

A paper money dispensing device stores bills in stacked relation, successively separates the lowermost bill from the stack of bills, and moves the separated bills to an area where they can be dispensed to a patron. That paper money dispensing device automatically senses when two bills stick together and are simultaneously separated from the stack of bills; and it moves those bills to a storage area for safe-keeping, and then separates further bills from the stack of bills and moves those further bills to the area where they can be dispensed to a patron. Where that paper money dispensing device is used to dispense a fixed number of bills, that paper money dispensing device separates the said number of bills from the stack of bills during each cycle of operation and then

dispenses the separated bills at the start of the next-succeeding cycle of operation; thereby providing prompt dispensing of the bills tc be dispensed during the next-succeeding cycle of operation. Where that paper money dispensing device is used to dispense variable numbers of bills, that paper money dispensing device separates the desired number of bills from



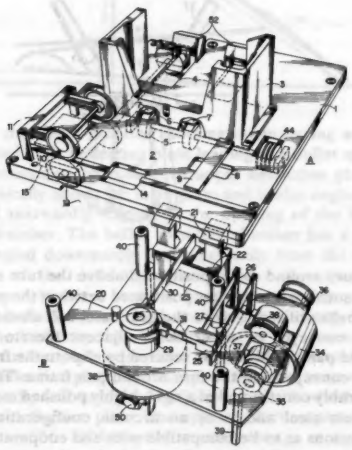
the stack of bills and promptly dispenses the separated bills. That paper money dispensing device dispenses all of the bills of the desired number of bills at the same instant, and it folds those bills as they are dispensed; thereby minimizing the likelihood that a patron would inadvertently fail to take all of the bills due him.

3,701,524

MODULARIZED CARD READER

Harold M. Shneider, Weston, and Robert G. Bower, Concord, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 29, 1970, Ser. No. 76,412
Int. Cl. B65h *3/24*
U.S. Cl. 271—10 **2 Claims**



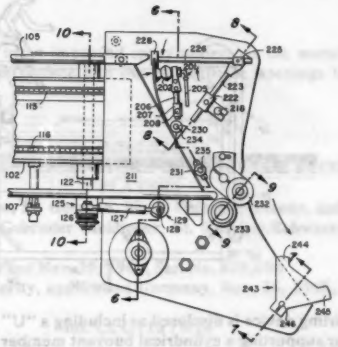
A card reader having a combination of electro-mechanical modules, each of which operate independently of one another and yet when spatially positioned with respect to one another perform the machine functions of card transport and card reading. A pick-push module, comprising a picker knife and a pusher arm, cooperates with a card carrying module which includes rolls for moving cards through a visible wait station to a read station. A read head within the read station reads the cards.

3,701,525

APPARATUS AND METHOD FOR ERECTING A CARRIER

Helmut E. W. Masch, San Jose, Calif., assignor to Fibreboard Corporation, San Francisco, Calif.

Division of Ser. No. 664,390, Aug. 30, 1967, Pat. No. 3,521,427. This application March 19, 1970, Ser. No. 24,974
Int. Cl. B65n *3/24*
U.S. Cl. 271—43 A **9 Claims**



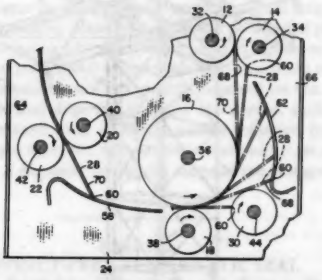
Flattened basket style carrier blanks are loaded into a carton magazine and are individually removed therefrom at a feeding station. The feeding station sequentially comprises a pivoted suction cup for bending a trailing end of a blank out of the magazine, a shuttle mechanism for engaging a trailing edge of the blank and for moving the blank transversely relative to the magazine, deflecting means for engaging opposite surfaces of the blank and for deflecting a leading end thereof tangentially relative to the deflecting means and pinch rolls for receiving the leading end of the blank from the deflecting means.

3,701,526

FILM TURNABOUT SYSTEM

Henry F. Hope, 195 Welsh Road, Huntingdon Valley, Pa., and Stephen F. Hope, 2321 Wyandotte Road, Willow Grove, Pa.

Filed Dec. 14, 1970, Ser. No. 97,808
Int. Cl. B65h *5/06*
U.S. Cl. 271—51 **3 Claims**



A film turnabout system for conveying X-ray or other film through a processing tank which incorporates a rack assembly having pairs of rollers and discretely positioned film guides which cooperate to drive the film through the processing tank at constant speed without scratching the surface of the film. The device further includes a bottom positioned soft roller which functions at increased rotative speed to direct the film across the bottom of the rack assembly in a minimum of required width and then upwardly through the tank without scratching or other injury.

3,701,527

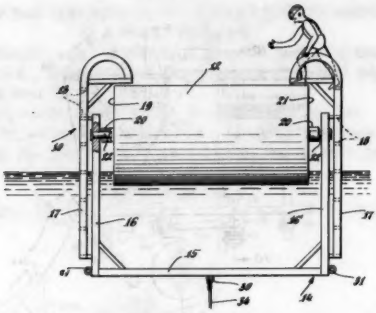
TRANSPORTABLE FLOATING BIRLING DEVICE WITH LADDER MOUNT

Joseph R. Beaton, Hillside Terrace, Marcy, N.Y.

Filed Dec. 2, 1971, Ser. No. 204,075

Int. Cl. A63b *23/06*

U.S. Cl. 272—1 B **8 Claims**



A birling device is disclosed as including a "U" shaped control bar supporting a cylindrical buoyant member in a manner to permit the free rotation of the member. The cylindrical member is rotationally mounted to the arms of the control bar. A ladder is carried by at least one arm of the control bar. The diameter of the cylindrical member is substantially greater than the width of an arm of the control bar and the ladder so that when out of the water, the cylindrical member provides a rolling surface unobstructed by projecting surfaces of the birling device.

3,701,528

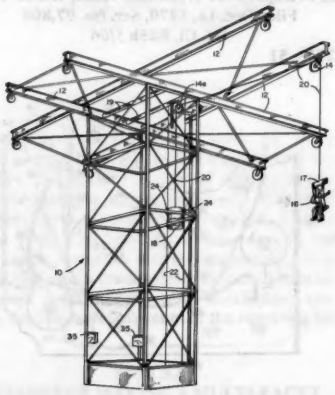
METHOD FOR SIMULATING THE REDUCTION OF GRAVITY

Jerry E. Ryan, 4150 S. Elwood, Tulsa, Okla.

Filed April 20, 1970, Ser. No. 29,887

Int. Cl. A63j *5/12*

U.S. Cl. 272—6 **1 Claim**



This invention provides a method and means for simulating the reduction of gravitational forces upon persons. The gravity-reducing effect is achieved by counterbalancing the person through a cable and pulley system having a weight somewhat less than the person. This expedient in fact counterbalances the weight of the person in a manner resulting in an actual reduction of the free acceleration of the person toward the earth, thereby simulating a reduction in the natural gravitational pull. The disclosed embodiment is for an amusement park "ride" device employing this principle.

3,701,529

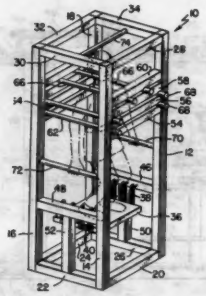
EXERCISING APPARATUS

Charles H. Kruthaupt, 10200 Trapp Lane, Cincinnati, Ohio

Filed Dec. 14, 1970, Ser. No. 97,694

Int. Cl. A63b *21/20*

U.S. Cl. 272—83 R **9 Claims**



An exercising apparatus for permitting individual body building and conditioning exercising is disclosed. A platform is yieldably mounted in a supporting frame for movement in the vertical direction. A plurality of horizontal bars are mounted on the frame vertically above the platform. An exerciser stands on the platform and exerts pressure or force against the horizontal bars. The force is transmitted through the body to the platform which moves vertically downward.

3,701,530

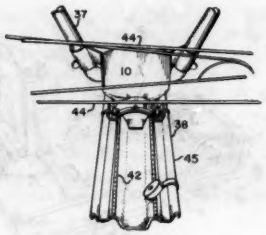
TURN AROUND PAN SHIELD FOR AUTOMATIC PIN SETTERS

Edwin C. Broussard, 1713 Pasadena, San Antonio, Tex.

Filed Feb. 16, 1971, Ser. No. 115,614

Int. Cl. A63d *5/00*

U.S. Cl. 273—43 R **5 Claims**



A turn around shield positioned above the turn around pan in an automatic pin setter positioned between the pan and the "V" belts utilized to drive the gear case, ball elevator and the cross conveyor or other belts adjacent thereto. The turn around pan shield may be secured by clips to the frame of the cross-conveyor and the turn around pan frame. The shield is preferably constructed of a rigid, highly polished metal such as stainless steel and is of an arcuate configuration of such dimensions as to be compatible with and cooperatingly assist the turn around pan in performing its function.

3,701,531

ELASTIC PROJECTILE AND TREE-LIKE TARGET

Jeffrey L. Bowers, 1023 E. N. Broadway, Columbus, Ohio

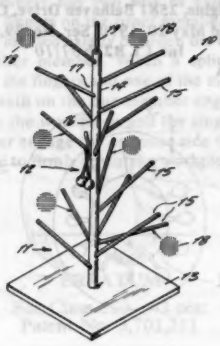
Filed Feb. 11, 1971, Ser. No. 114,422

Int. Cl. A63b *71/02*

U.S. Cl. 273—95 R **1 Claim**

A ball tossing game which includes a goal post and an elastically resilient tossing ball unit, the goal post including a verti-

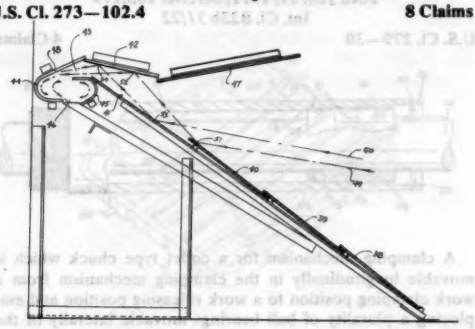
cal trunk with sidewardly extending branches, each one of which is painted with a specific color so to designate a different scoring value and over which the tossing ball unit is attempted to be hooked or entwined when thrown.



3,701,532
BULLET DEFLECTION APPARATUS

Joseph Nikoden, Inverness, Ill., assignor to Detroit Trap Corporation, Schaumberg, Ill

Filed Oct. 7, 1970, Ser. No. 79,028
Int. Cl. F41j *11/12*
U.S. Cl. 273—102.4 8 Claims



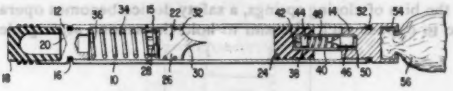
A bullet trap for a practice shooting range having an upwardly angled main deflecting plate leading to a bullet spending or de-energizing chamber. An upper deflection plate is located vertically above the main plate and is also angled upwardly and rearwardly leading to the opening of the bullet spending chamber. The bullet spending chamber has a plate which is angled downwardly and rearwardly from the rearward edge of the deflection plate. The bullet spending chamber has cylindrical surfaces facing one another which redirect the bullet back and forth until its kinetic energy is exhausted. The lead may then be recovered at any convenient location. A further plate is provided immediately forwardly of the upper deflection plate, and this plate is angled rearwardly and downwardly and terminates adjacent to the forward edge of the upper deflection plate. The upper deflection plate may be angled from 5° to 12° for optimum conditions.

3,701,533
MATERIAL DISCHARGING DART

Harold C. Palmer, Douglasville, Ga., assignor to Palmer Chemical and Equipment Company, Inc., Douglasville, Ga.

Filed Oct. 29, 1970, Ser. No. 85,106
Int. Cl. A63b *65/02*; F42b *11/18, 13/36*
U.S. Cl. 273—106.5 R 8 Claims

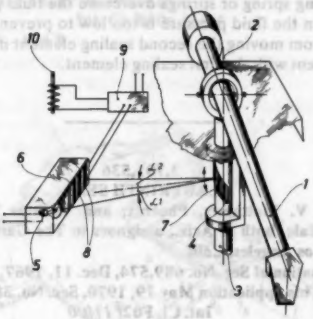
A dart projectile for carrying and discharging a fluid material upon impact wherein an explosive-actuated fluid or other material directing piston is moved longitudinally in the dart past a series of openings in the wall thereof. The piston includes a cuspidal-curved surface which provides discharge of the material in an improved spray pattern as the material is moved by the surface and out through the openings in the wall.



3,701,534
PHOTOELECTRIC SWITCHING DEVICE FOR RECORD PLAYERS

Eckhard Laue, St. Georgen, Black Forest, Germany, assignor to DUAL Gebruder Steidinger, St. Georgen/Schwarzwald, Germany

Filed Nov. 25, 1969, Ser. No. 879,694
Claims priority, application Germany, Nov. 26, 1968, P 18 10 983.6
Int. Cl. G11b *19/14*
U.S. Cl. 274—1 L 1 Claim



A light electric switching device for a record playing apparatus, which comprises a tone arm which is swingably mounted about a vertical axis for sensing the surface of a record. A mirror is secured close to the vertical axis of the tone arm and with its plane perpendicular to a radial plane of the vertical swinging axis of said tone arm. A light source and a light electric transmitter are provided, to constitute two elements. Both elements are immovably disposed on the record playing device and disposed opposite the mirror, such that a light beam emitted from said light source reflected from the mirror impinges upon the light sensitive transmitter, as soon as the tone arm is disposed within the range of the exit groove of the record.

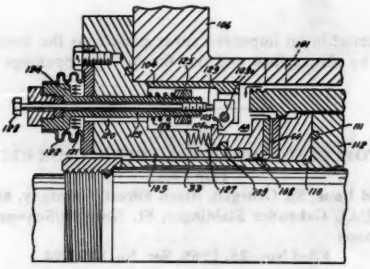
3,701,535
CONTACT-FREE HYDROSTATIC SEAL

Dieter Born, Hessheim; Peter Stech, and Werner Huebner, both of Roxheim, all of Germany, assignors to Klein, Schanglin & Becker A.G., Frankenthal-Pfalz, Germany

Division of Ser. No. 702,001, Jan. 31, 1968. This application April 27, 1970, Ser. No. 32,210
Claims priority, application Germany, July 27, 1967, K 62907; Aug. 11, 1967, K 63081
Int. Cl. F16j *15/40, 15/44*
U.S. Cl. 277—3 5 Claims

A contact-free hydrostatic seal wherein a rotary first annular sealing element defines with a second annular sealing element a gap for leak fluid. The second sealing element is biased

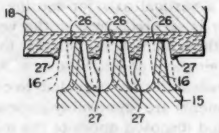
toward the first sealing element by closing springs which tend to reduce the width of the gap. A pump delivers fluid into the gap to oppose the action of closing springs and to prevent direct contact between the sealing elements. When the pressure of fluid drops to such an extent that it can be overcome by the bias of closing springs, a safety device becomes operative to oppose such bias and to hold the second sealing element away from the first sealing element. The safety device includes a lever which is pivoted into engagement with the second sealing element by one or more strong springs when such strong spring or springs overcome the fluid pressure at a time when the fluid pressure is too low to prevent the closing springs from moving the second sealing element into frictional engagement with the first sealing element.



3,701,536
LABYRINTH SEAL

Jennifer V. Matthews, Phoenix, and Thomas T. Hamrick, Scottsdale, both of Ariz., assignors to The Garret Corporation, Los Angeles, Calif.

Continuation of Ser. No. 689,574, Dec. 11, 1967, abandoned. This application May 19, 1970, Ser. No. 38,657
Int. Cl. F02f *11/00*
U.S. Cl. 277—56 **15 Claims**

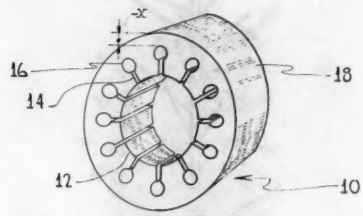


This labyrinth seal has first and second relatively movable members with a rub-tolerant layer on one and spaced, continuous projections on the other. The projections have relatively thin edges initially disposed in closely spaced relation to the surface of the rub-tolerant layer, and when relative movement between the members takes place, some engagement of the edges with the rub-tolerant layer may take place. The layer is of a composition such that when the edges of the projections engage it during relative movement, some of the material will be compressed or moved to one or both sides of the projections to form grooves. The displaced material builds up at the sides of the grooves and increases their effective depth. The spacing of the projections exceeds the potential relative lateral movement between the members so that the resulting ribs at the sides of the grooves will not be destroyed. The resulting interfitting projection edges and grooves form a tortuous passage and reduce the flow of fluids between the members.

3,701,537
SPLIT TRANSFER SLEEVE

Joseph J. Rossman, 926 N. Hill Lane, Cincinnati, Ohio, and Wilbur E. Hudgins, 2581 Belhaven Drive, Cincinnati, Ohio

Filed May 20, 1970, Ser. No. 39,015
Int. Cl. B23b *31/10*
U.S. Cl. 279—1 A **1 Claim**

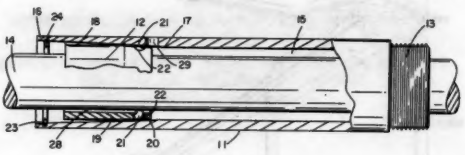


A split transfer sleeve for use in conjunction with expanding arbors and chucks is disclosed. The transfer sleeve is so constructed that, upon completion of the expansion or contraction of the sleeve to engage a workpiece, the sleeve work engaging surface is a continuous and uninterrupted surface.

3,701,538
COLLET ASSEMBLY

Joe L. Hartsell, P.O. Box 171, Casa Grande, Ariz.

Filed Jan. 11, 1971, Ser. No. 105,179
Int. Cl. B23b *31/22*
U.S. Cl. 279—30 **4 Claims**

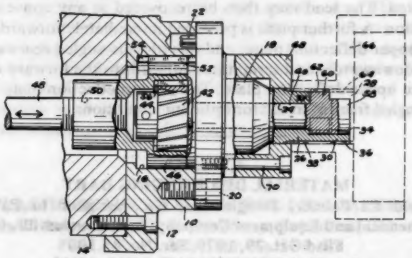


A clamping mechanism for a collet type chuck which is movable longitudinally in the clamping mechanism from a work clamping position to a work releasing position and employing a plurality of ball bearings movable laterally of the chuck for gripping and releasing the work.

3,701,539
WORK HOLDER FOR SPLINED WORKPIECES

London T. Morawski, Mt. Clemens, and John J. Parker, Birmingham, both of Mich., assignors to The John J. Parker Living Trust

Filed March 3, 1971, Ser. No. 120,447
Int. Cl. B23b *31/10*
U.S. Cl. 279—1 G **12 Claims**



A chuck for holding a splined workpiece having two relatively movable members each formed with a set of circum-

ferentially spaced fingers thereon. The members being assembled with the fingers in circumferential interdigital relation. One of the members has two sets of axially spaced teeth thereon and the fingers on the other member have a single set of teeth thereon located axially between the two sets of spaced teeth on the other member. When a splined workpiece is telescoped over the fingers and one of the members is rotated the two sets of teeth on the one member engage one side face of the splines on the workpiece and the single set of teeth on the other member engage the opposite side face of the splines on the workpiece to firmly retain the workpiece on the holder.

ERRATUM

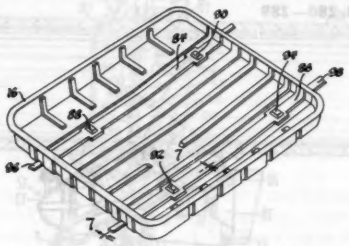
For Class 280—43 see:
Patent No. 3,701,211

3,701,540

FUEL TANK ASSEMBLY

William L. Pringle, Grosse Pointe Shores, Mich., assignor to William L. Pringle and Associates, Inc., Detroit, Mich.

Division of Ser. No. 36,022, May 11, 1970, Pat. No. 3,648,886.
This application Dec. 10, 1971, Ser. No. 206,764
Int. Cl. B60p *3/22*
U.S. Cl. 280—5 A **4 Claims**



A vehicular fuel tank assembly comprising a steel outer container and a pliable inner member such as a liner or diaphragm having a plurality of circular folds in a substantially horizontal wall portion thereof to permit the center of the wall to collapse telescopically and vertically relative to the bottom of the container as fuel is exhausted from the tank assembly. This telescopic collapse provides volumetric variation in the fuel storage area and further provides variable anti-slosh baffling for the unused fuel. A control valve regulates air flow into and out of the exhausted space between the container and the internal member. Fuel gaging is accomplished by monitoring the displacement of the collapsible internal member portion relative to the container. The container is mounted on the vehicle to permit limited damped longitudinal displacement under abnormally high acceleration load conditions.

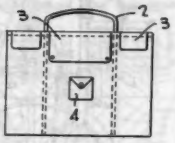
3,701,541

FOLDING BAGS TO BE USED IN SHOPPING HAVING COLLAPSIBLE WHEELS, AND CAPABLE TO BE REDUCED TO A HAND-BAG

Tullio Tarducci, Via Caffaro 82, 00154; Alvaro Gatti, Via Alessandro Puerio, and Antonio Buffa, Via Tozzi No. 37, all of Rome, Italy

Filed April 24, 1970, Ser. No. 31,506
Int. Cl. B62b *11/00*
U.S. Cl. 280—37 **2 Claims**

A wheeled shopping cart is collapsible so that it may be carried as a hand-bag. The wheels of the cart along with its supports may be collapsed and the cart may thereafter be folded



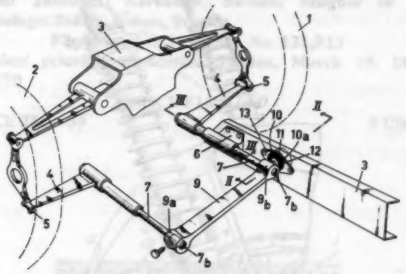
so as to reduce the overall size thereof into a hand carrying bag.

3,701,542

VEHICLE SUSPENSION SYSTEM

Albert A. G. Grosseau, Chaville (Hauts-de-Seine), France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed July 15, 1970, Ser. No. 55,055
Claims priority, application France, July 16, 1969, 6924221; May 14, 1970, 7017675
Int. Cl. B60g *11/24*
U.S. Cl. 280—124 B **4 Claims**



A vehicle suspension system for a transverse pair of vehicle wheels comprising a pivotal linkage connected to each wheel and torsion bars connected to each pivotal linkage and each bar being mounted on the vehicle chassis. The torsion bars are interconnected at their ends remote from the respective connections to the pivotal linkages by an elongate lamina member or members, the member or members lying in the plane of the torsion bars or in a plane parallel to the plane of the torsion bars.

3,701,543

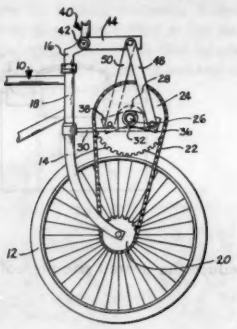
DRIVE MECHANISM FOR WHEELED VEHICLE

Wallace Clark, 1830 South German Church Road, Indianapolis, Ind.; Reginald A. Jones, 35 Grand Canyon Drive, Los Alamos, N. Mex., and James L. Teeters, 2115 Bryen Avenue, Lot C-9, Panama City, Fla.

Filed Sept. 21, 1970, Ser. No. 73,991
Int. Cl. B62m *1/12*
U.S. Cl. 280—234 **2 Claims**

Drive mechanism for occupant propelled wheeled vehicle including an occupant actuated pivotal lever drivingly con-

nected by a crank mechanism to a pair of overrunning clutches carried on the driving sprocket shaft. The clutches



are arranged to drive the shaft in the same direction but through angularly spaced limited driving arcs.

3,701,544

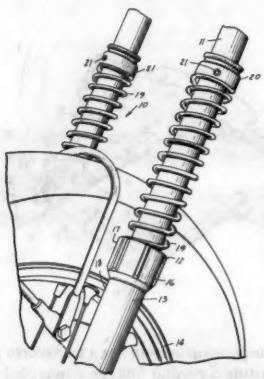
MOTORCYCLE FRONT END ASSEMBLY

Frank M. Stankovich, 1130 Florence, Evanston, Ill.

Filed Oct. 13, 1970, Ser. No. 80,296

Int. Cl. B62k *21/02, 25/02*

U.S. Cl. 280—276 **6 Claims**



A front end suspension assembly for a motorcycle having a pair of fork tubes telescopically received in a pair of front wheel axle connected support tubes terminating at their open ends in spring collars, and a compression spring entrapped between the support tube collar and an adjustable locking collar received on the fork tubes.

3,701,545

FRAME FOR UTILIZATION WITH A THREE-WHEEL, PEDAL DRIVEN VEHICLE

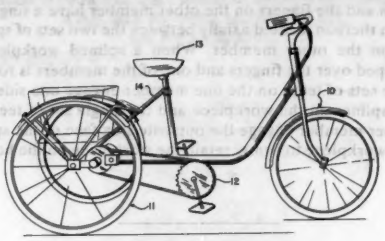
Robert G. Hendricks, and Billie J. Eberhart, both of 9242 North 36th Drive, Phoenix, Ariz.

Filed Dec. 17, 1969, Ser. No. 885,841

Int. Cl. B62k *5/06*

U.S. Cl. 280—282 **1 Claim**

In order to convert a bicycle to a three-wheeled vehicle, a frame member is provided which consists of a single primary tube extending between the front and rear wheel support means with seat support means and front sprocket journal support means fixed thereto. The primary tube of the frame has first and second straight sections and an intermediate curved section. The first straight section extends forwardly from the rear wheel assembly to the rearward terminus of the curved



section, and the second straight section extends downwardly and rearwardly from the front wheel assembly to the forward terminus of the curved section.

3,701,546

BICYCLE AND GEAR SHIFTING ARRANGEMENT FOR THE SAME

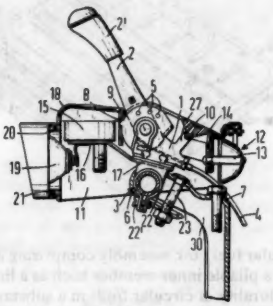
Hans Joachim Schwerdhofer, and Gerhard Max Wolf, both of Schweinfurt, Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Dec. 21, 1970, Ser. No. 100,330

Claims priority, application Germany, Dec. 24, 1969, P 19 64 867.0

Int. Cl. G05g *9/00, 11/00*

U.S. Cl. 280—289 **4 Claims**



The gear shifting lever on a bicycle equipped with a multiple-speed transmission between the pedal shaft and the rear wheel is mounted centrally on the handle bar in such a manner that it projects upwardly from the handle bar and pivots in a plane which includes or is contiguously adjacent to the axis of the steering column and of the front wheel fork attached to the column.

3,701,547

COUPLING UNITS FOR ARTICULATED VEHICLES

Raymond Goold, 3 Beaufort Road, Downend, Bristol, England

Filed March 16, 1970, Ser. No. 19,764

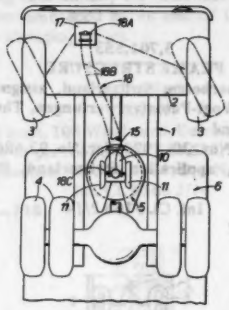
Claims priority, application Great Britain, March 19, 1969, 14,487/69

Int. Cl. B62d *53/08*

U.S. Cl. 280—432 **9 Claims**

The coupling unit of an articulated vehicle is locked to prevent jacknifing or trailer swing, by releasable locking means which may be mechanical or hydraulic. The locking means are selectively released only in response to steering

movements of the vehicle, so as to permit limited and preferably unidirectional, relative angular movement of the

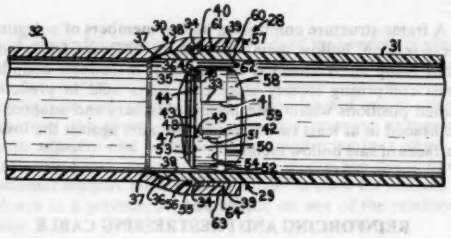


tractor and trailer, only by an amount and in a direction determined by the magnitude and sense of the steering movements.

3,701,548
PIPE JOINT SYSTEM

John S. McGuire, P.O. Box 157, Ozark, Mo.

Filed June 25, 1970, Ser. No. 49,596
Int. Cl. F16l *19/02, 21/08, 37/24*
U.S. Cl. 285—81 **6 Claims**



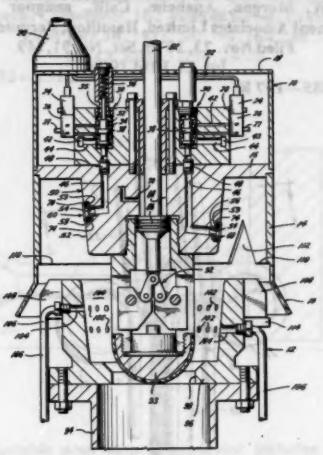
A system for joining elongate interfitting male and female portions of adjacent tubular members having interengaging locking means on the male and female portions to retain the male portion within the female portion and to effect relative longitudinal movement of the male portion into the respective female portion which moves cooperative seating surfaces on the male and female portions into sealing engagement in response to relative rotative movement of the male and female portions after interengagement of the locking means.

3,701,549
CONNECTOR

Paul C. Koomey, 970 Bunker Hill Road, Douwe DeVries, Tex., and Samuel E. Gilmore, 265 Bellaire, Bellaire, Tex.

Continuation-in-part of Ser. No. 824,474, May 14, 1969, abandoned. This application Oct. 9, 1970, Ser. No. 79,504
Int. Cl. F16l *35/00*
U.S. Cl. 285—24 **19 Claims**

The present invention is directed to a connector of the type commonly used in underwater well drilling operations for control of the wellhead functions. The preferred embodiment utilizes a tapered stinger with a mating receptacle. A plurality of passageways are contained in both the stinger and receptacle, which passageways mate when the stinger is engaged in the receptacle. An improved annular seal is positioned around each of the stinger passageways to form a water and pressure tight seal with its mating receptacle passageway. Through these joined passageways hydraulic fluid, water or a mixture of both is pumped to perform the control functions. The seals are comprised of an annular resilient seal member which is secured to the stinger by an internally positioned retainer. A

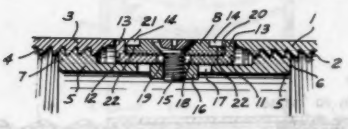


modification of the seal utilizes a reinforcing ring to prevent the flexible seal from improperly shifting positions in response to the pressure moving through the passageways.

3,701,550
COUPLING DEVICE FOR PIPES WITH CIRCULAR CROSS SECTIONS

Gunnar Jacobson, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed March 8, 1971, Ser. No. 121,923
Claims priority, application Sweden, March 19, 1970, 3701/70
Int. Cl. F16l *17/00*
U.S. Cl. 285—39 **9 Claims**

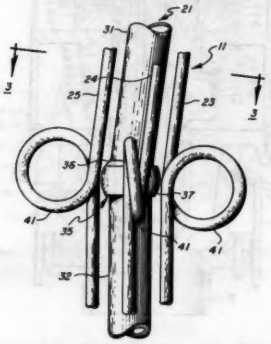


Two pipes having at their ends to be coupled internal threads of the opposite hand are coupled by a coupling ring which has corresponding external threads. Rotating of the coupling ring is effected by means of an intermediate member encompassing the ring axially displaceable thereon. A locking device in the form of movable guide rings is interposed between the coupling ring and the intermediate member. These guide rings have protrusions which are engageable with corresponding recesses at the ends of the pipes. In the event the threads on the coupling ring are initially engaged with the threads on one pipe end only, rotation of the intermediate member causes axial displacement thereof with respect to its position relative to the threads on the coupling ring thereby causing engagement of the threads on the coupling ring with the threads of the second pipe also. Upon completion of the threading operation the guide rings are in pressure engagement with the intermediate member so that the latter is locked in its position relative to the pipes thereby absorbing torsional forces as may occur between the coupling ring and the intermediate member.

3,701,551
MULTI-CONDUIT RISER WITH A FLEXIBLE JOINT

George W. Morgan, Anaheim, Calif., assignor to Subsea Equipment Associates Limited, Hamilton, Bermuda

Filed Nov. 23, 1970, Ser. No. 91,749
Int. Cl. F16l 39/00
U.S. Cl. 285—137 R 10 Claims

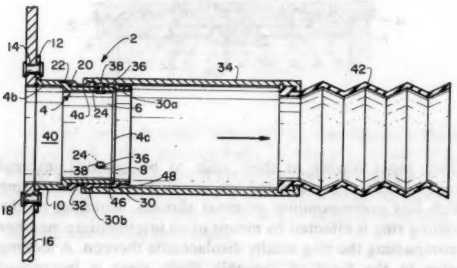


A multi-conduit riser, primarily for use in underwater installation, has its larger center core conduit connected to a fixed structure on the ocean floor by a ball and socket assembly and has each of its smaller conduits that are disposed around the center core conduit forming a 360° loop near the ocean floor before communication with the fixed structure to provide a pinned connection.

3,701,552
COMPOSITE CONSTRUCTION FOR NIPPLE USED IN GROUND STARTING FOR JET ENGINES

Arnold A. Cowan, Tarzana, Calif., assignor to Bobrick Aero Missile Products, Hollywood, Calif.

Filed Oct. 19, 1970, Ser. No. 81,645
Int. Cl. F16l 3/04
U.S. Cl. 285—158 6 Claims



A nipple construction particularly adapted for use in aircraft cooperative with a corresponding coupling wherein optimum structural and durability characteristics, consistent with minimum weight design criteria, are obtained by the incorporation in said nipple of a first member of lightweight metal having a second member or sleeve of greater wear resistance and structural strength encompassing said first member and imparting said wear resistance and structural strength to a majority of the external surface of said nipple by acting as a buffer to absorb wear and impact arising out of the many connect and disconnect operations to which nipples of this type are usually subjected.

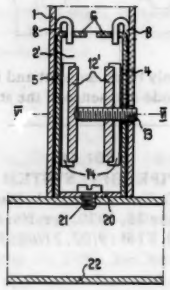
ERRATUM

For Class 287—189 see:
Patent No. 3,701,613

3,701,553
FRAME STRUCTURE

Wilhelm Vogt, Oberhofen, Switzerland, assignor to Aktiengesellschaft fur Vogt-Patentverwertungen, Thun, Canton of Berne, Switzerland

Filed Nov. 30, 1970, Ser. No. 93,686
Claims priority, application Switzerland, Dec. 5, 1969, 18160/69
Int. Cl. F16b 2/14
U.S. Cl. 287—54 C 9 Claims

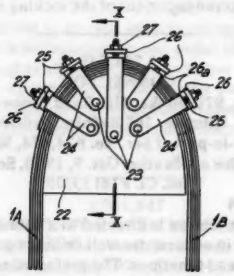


A frame structure comprising hollow members of polygonal cross-section, hollow members forming different frame portions being interconnected by means of spreadable coupling units comprising loosely assembled parts held in predetermined positions within said hollow members and adapted to be braced in at least two directions in pairs against the inside surfaces of said hollow members.

3,701,554
REINFORCING AND PRESTRESSING CABLE

Andre Puyo, and Pierre Andre Habib, both of Paris, France, assignors to Coyne et Bellier, Bureau d'Ingenieurs Conseils, Paris, France

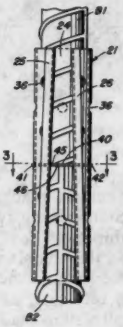
Filed Nov. 21, 1969, Ser. No. 878,856
Claims priority, application France, Nov. 26, 1968, 68175335
Int. Cl. F16b 7/04
U.S. Cl. 287—78 7 Claims



A tension cable essentially composed of a multiplicity of thin strips is clamped at one or more locations with freedom of slight relative slippage of the strips to equalize their stresses. At each clamping point the strips may be separated by interposed foils which may be constituted by parts of the strips of a similar cable or by the opposite ends of the same cable bent

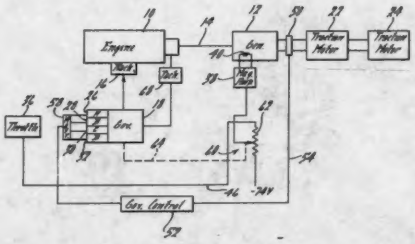
back upon itself. The clamping pressure may be partly absorbed by laterally projecting foil portions with interposed spacers having substantially the thickness of the strips. A terminal member embraced by an end of the cable may contribute to the clamping effect.

3,701,555
CLAMP
Kenneth D. Harris, 108 Windward, Euless, Tex.
Continuation-in-part of Ser. No. 654,522, July 19, 1967. This application Nov. 24, 1969, Ser. No. 879,382
Int. Cl. F16b 2/14
U.S. Cl. 287—110 **6 Claims**



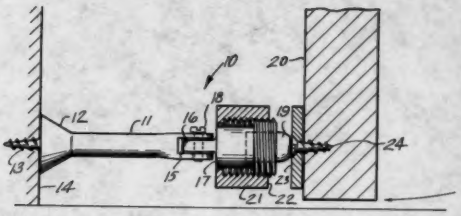
A clamp for securing adjacent ends of longitudinally aligned reinforcing bars of concrete structures which includes a tubular longitudinally split sleeve and a contracting member for pulling the ends of the tubular sleeve toward one another to contract the sleeve radially into firm gripping engagement with adjacent end portions of the reinforcing bars which are telescoped into opposite ends of the sleeve, the sleeve having internal support means intermediate its ends for holding the sleeve in a predetermined position on one of the reinforcing bars.

3,701,556
CONTROL SYSTEM FOR DIESEL LOCOMOTIVE
Abraham W. Richmond, Sycamore, Ill., assignor to Aeroquip Corporation, Jackson, Mich.
Filed Oct. 1, 1971, Ser. No. 185,639
Int. Cl. H02p 9/04
U.S. Cl. 290—40 B **30 Claims**



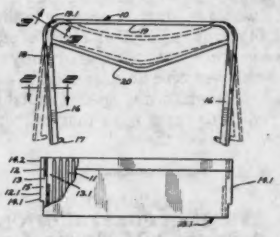
A control system for a diesel locomotive wherein the locomotive is controlled on a power basis, the engineer selecting the power to be supplied the traction motors from the electrical generator, the power selection being sensed and used to control the diesel engine. The system includes means for selecting an infinite number of power settings. Thus, the engineer selects a particular desired power setting or successively selects power settings and the control system automatically controls the engine to achieve that power setting.

3,701,557
ADJUSTABLE MAGNETIC DOOR STOP
James Vincent Centofante, 102 Randall Street, Cranston, R.I.
Filed July 20, 1971, Ser. No. 164,258
Int. Cl. E05c 17/56, 19/16
U.S. Cl. 292—251.5 **4 Claims**



An adjustable door stop. This device includes a knurled sleeve threaded onto a cylinder having an extending rubber portion for abutting with a door and a projection is pivotably secured to a shank which mounts to the wall base and the door has secured to it a magnetic disc which will be attracted and held to the face of the sleeve when it is threaded outward to cover the rubber projection.

3,701,558
DETACHABLE HANDLE FOR RECEPTACLE
William H. Baker, Chaska, Minn., assignor to Fluoroware, Inc., Chaska, Minn.
Filed July 19, 1971, Ser. No. 163,966
Int. Cl. A47j 45/07
U.S. Cl. 294—33 **10 Claims**

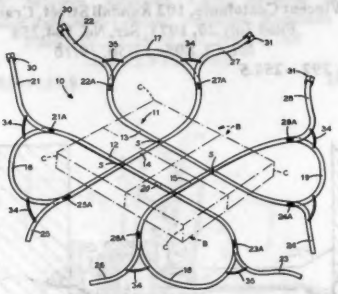


A detachable lifting handle for a receptacle, wherein depending leg portions swing outwardly to release the receptacle, and transverse and superposed flexible bars extending between the leg portions produce outward swinging of the legs when squeezed together.

3,701,559
COMBINATION SLING AND UNITIZING MEANS
Frank J. Marino and Anthony P. Marino, Brooklyn, N.Y., assignors to Marino Systems, Inc., Bay Shore, N.Y.
Filed Mar. 25, 1971, Ser. No. 128,352
Int. Cl. B66c 1/18
U.S. Cl. 294—74 **4 Claims**

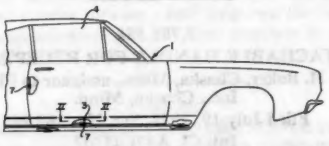
A cargo sling for unitizing a plurality of cargo units;

the sling being adapted to remain with the unitized cargo units to facilitate successive transfer operations as the



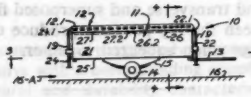
cargo units are moved between warehouses and various transport means.

3,701,560
AUTOMOTIVE VEHICLE BODY ACCESS AND DRAIN PLUG
Arthur F. Emmerson, 539 Walnut Drive, Euclid, Ohio 44132
Filed Dec. 30, 1970, Ser. No. 102,861
Int. Cl. F16k *15/14*
U.S. Cl. 296—1 R **3 Claims**



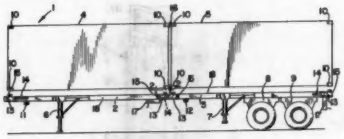
An automotive vehicle body has walls that form a chamber between them, such as a hollow door. At least one of the walls has an opening through it. In the case of a door there would be such an opening in the bottom. This opening is filled by a resilient closure plug that has a central passage through it, which normally is substantially closed by a transverse flexible wall. This wall is provided with at least three uniformly spaced radial slots intersecting at its center to form flaps that can move back and forth to open and close the wall.

3,701,561
TRAILER CONSTRUCTION
Peter Friesen, 3627 204th St., Langley, British Columbia, Canada
Filed May 28, 1970, Ser. No. 41,225
Int. Cl. B60p *3/34*
U.S. Cl. 296—27 **13 Claims**



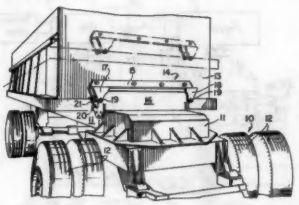
A trailer including a box and a roof, the trailer adapted to be towed behind a vehicle in a closed condition with the roof adjacent the box. The roof is adapted to be raised by a crossed four-bar mechanism, the roof forming one of the bars and an opposite bar being effectively of variable length, variation in length accomplished by cable actuated slide mechanism at bases of roof supporting corner posts. Undesirable roof tilt prevented by lengths of cable or links secured to the corner posts and the box, or by canvas acting as guylines.

3,701,562
CONTAINER CHASSIS ATTACHMENT ARRANGEMENT
George W. Carr, Cincinnati, Ohio, assignor to Pullman Incorporated, Chicago, Ill.
Filed Nov. 6, 1969, Ser. No. 874,427
Int. Cl. B65j *1/22*
U.S. Cl. 296—35 A **4 Claims**



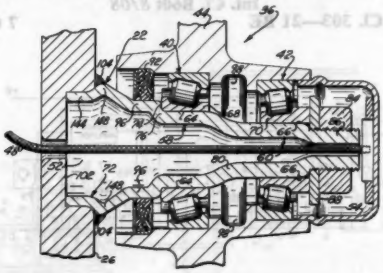
A trailer container chassis attachment arrangement for coupling one large container or two smaller containers to the chassis including twist lock means comprising a twist lock structure on the chassis at each corner casting connecting same to the chassis, each twist lock structure including a housing receiving a vertically retractable shear block reciprocally supported by a screw retained on the housing by nut means to elevate and lower the screw means with the shear block into the bottom of the corner casting, the top portion of the screw carrying a twist lock head rotatably positioned into locking position in the container, and lock means in the form of a vertically reciprocable plunger locking the screw against rotation in elevated and lowered locked and unlocked positions of the twist lock head and twist lock screw.

3,701,563
LOCKING MEANS FOR DUMP TRUCK
John Jaye Lasko and Douglas Gordon Hough, Prince George, British Columbia, Canada, assignors to Douglas Gordon Hough, Prince George, British Columbia, Canada
Filed Jan. 26, 1971, Ser. No. 109,805
Claims priority, application Canada, Jan. 22, 1970, 072,869
Int. Cl. B62d *27/00*
U.S. Cl. 298—38 **6 Claims**



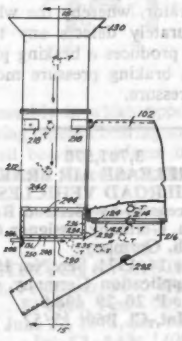
A clamping device for securing the free end of the dump body of a dump body assembly in which the clamping device includes a pin secured to the body and engageable in a slot in a locking member rotatably mounted in the frame between positions in which the slot can receive or release the pin and in which the slot may retain the pin. The locking member is urged in an over-center fashion between the two positions.

3,701,564
VEHICLE AXLE SPINDLE
Otto V. Puzik, Willoughby, Ohio, assignor to Willow Hill Industries, Inc., Willoughby, Ohio
Filed July 28, 1970, Ser. No. 58,950
Int. Cl. B21k *1/06*
U.S. Cl. 301—131 5 Claims



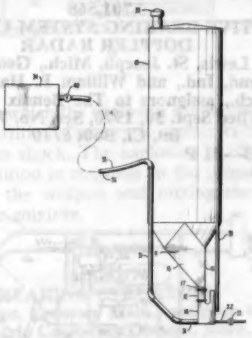
A hollow axle spindle for a vehicle is formed with an axially extending cavity by cold working a tubular blank. During this cold working process, dies are utilized to reduce the external diameter of a portion of the tubular blank to form an inner bearing support section. An outer bearing support section is formed by further reducing the external diameter of an outer portion of the tubular blank. The inner bearing support section is subjected to relatively large operating stresses and has a greater wall thickness than a base section of the spindle. A radially extending shoulder is provided between the base section and inner bearing support section to position an inner bearing assembly relative to the spindle. In one embodiment of the invention, a pair of hollow spindles are integrally formed with a common axle.

3,701,565
ARTICLE INPUT DEVICE FOR LIQUID-CONTAINING APPARATUS
Robert P. Gutterman, Bethesda, Md., and Le Baron H. Washington, Annandale, Va., assignors to General Kinetics Inc., South Reston, Va.
Filed June 10, 1970, Ser. No. 45,199
Int. Cl. B65g *53/30*
U.S. Cl. 302—14 6 Claims



For introducing articles into a container of liquid in which many of the articles will become suspended or float, the container is provided with a J-shaped inlet chute having its shorter leg opening through the bottom of the container. The longer leg of the chute extends above the level of liquid and below that level is provided with an aerator which produces an air/liquid slurry within the longer leg. This slurry has a lower specific gravity than the liquid alone, so articles dropped into the longer leg of the chute fall gently downwardly through the slurry, then bob upwardly in the chute shorter leg, through the container bottom opening and into the container. By preference, fluid jets are provided in the chute below the aerator to gently transfer the articles from the longer leg to the shorter leg of the chute.

3,701,566
METHOD AND APPARATUS FOR CONVEYING DUST
Percy E. Todd, Jackson Road, P.O. Box 1144, Apison, Tenn. 37302
Continuation-in-part of application Ser. No. 756,820, Sept. 3, 1968, now Patent No. 3,578,814, dated May 18, 1971. This application Mar. 9, 1970, Ser. No. 17,536
The portion of the term of the patent subsequent to May 18, 1988, has been disclaimed
Int. Cl. B65g *53/12*
U.S. Cl. 302—66 4 Claims

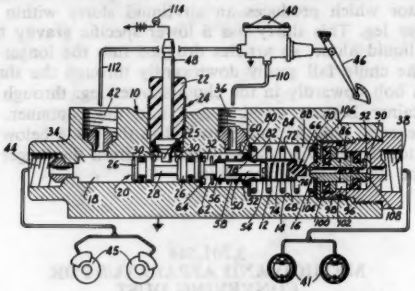


A method and apparatus for conveying fine particulate material from a storage silo at atmospheric pressure to a container or the like in which the material is transferred by gravity from the silo to a surge hopper below the silo, and pressurized air is then directed through the surge hopper and displaces the material and conveys it through a conduit to the container. The conduit includes a flow trap to assure that the particulate material is displaced by the fluid.

3,701,567
COMBINATION PROPORTIONING AND BYPASS VALVE
Paul B. Shutt and Charles M. Barnes, St. Joseph, Mich., assignors to The Bendix Corporation
Original application June 11, 1969, Ser. No. 832,162. Divided and this application Oct. 22, 1970, Ser. No. 82,924
Int. Cl. B60t *8/26, 11/34*
U.S. Cl. 303—6 C 2 Claims

A flow control valve for use in a braking system to systematically proportion hydraulic fluid to the front and rear brakes of the braking system. The flow control valve will correspondingly decrease the hydraulic fluid to the rear brakes with a shift in the center of gravity of the

vehicle during a rapid deceleration. With a failure in the front brake supply, the flow control valve permits un-



obstructed hydraulic fluid flow to provide maximum braking capability in the rear brakes.

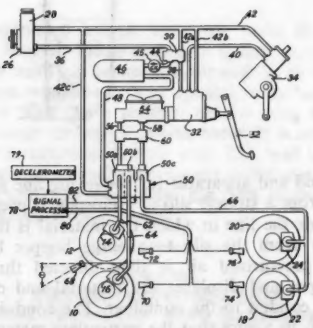
ERRATUM

For Class 303—22 see:
Patent No. 3,701,616

3,701,568
ADAPTIVE BRAKING SYSTEM UTILIZING DOPPLER RADAR

Richard L. Lewis, St. Joseph, Mich., George B. Hickner, South Bend, Ind., and William P. Harokopus, Southfield, Mich., assignors to The Bendix Corporation

Filed Sept. 30, 1970, Ser. No. 76,953
Int. Cl. B60t *8/10*
U.S. Cl. 303—21 P **7 Claims**

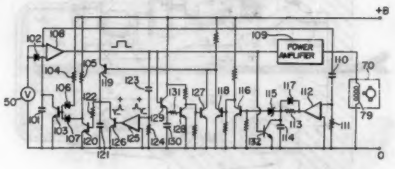


An adaptive braking system for a vehicle in which Doppler radar devices are used to measure wheel speeds and vehicle speed and provide electrical signals proportional thereto. These signals are processed and combined to provide further signals proportional to wheel slip, rate of change of wheel slip and vehicle acceleration. A system for detecting peaks of vehicle acceleration and transmitting a signal indicating the occurrence of such a peak may also be included. These several signals are transmitted to a programmer and/or logic element. Outputs from the programmer and/or logic element are received by brake pressure modulators to vary the pressure applied by the operator thereby maintaining maximum braking torque. A limiter can be incorporated to prevent slip values between the tire and road surface from exceeding some predetermined maximum.

3,701,569
ANTI-SKID SYSTEM FOR VEHICLES

Hiroshi Arai and Akira Nakamura, Toyota, Atutoshi Okamoto, Toyohashi, and Shunji Okumura, Kariya, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, and Nippondenso Kabushiki Kaisha, Kariya-shi, Japan

Filed Oct. 6, 1970, Ser. No. 78,524
Claims priority, application Japan, Oct. 16, 1969, 44/82,816, 44/82,817
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 BE **7 Claims**



An anti-skid system for vehicles is disclosed having a novel wheel lock detecting apparatus for supplying brake release signals. The exemplary system includes an actual wheel speed voltage generator for generating an actual wheel speed voltage corresponding to an actual wheel speed as well as a reference wheel speed voltage generator for generating a reference wheel speed voltage corresponding to a reference wheel speed. The reference wheel speed voltage exists across a capacitor and decreases with a first discharging time constant value corresponding to a first preset deceleration value. The reference voltage starts discharging from an initial value which is lower than the actual wheel speed voltage when the rate of reduction of actual wheel speed voltage reaches a value corresponding to said first preset deceleration value. A differential amplifier is included for producing an output signal to reduce braking pressure when said reference wheel speed voltage becomes higher than an actual wheel speed voltage. There is also a detector for detecting a predetermined variation in the actual wheel speed voltage during a time starting from the termination of the output signal from said differential amplifier or, in other words, after the brake release signal terminates. A time constant setting device is provided for switching the discharging time constant corresponding to said first preset deceleration value to a second discharging time constant value corresponding to a second preset deceleration value, which is smaller than the first. The switching between first and second discharge time constants is controlled by an output signal of said detector to thereby control the reference wheel speed voltage generator, whereby the wheel lock detecting apparatus accurately detects any tendency of the wheels to lock and produces a braking pressure reducing signal to actuate a braking pressure modulator thereby reducing braking pressure.

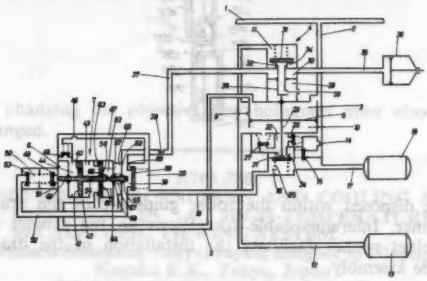
3,701,570
SINGLE RELEASE AIR BRAKE FOR RAILROAD VEHICLES

Reinhard Reitz, deceased, by Gertrud Reitz, legal representative, Munich, Germany, assignor to Knorr-Bremse G.m.b.H., Munich, Germany

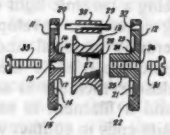
Filed June 14, 1971, Ser. No. 152,683
Claims priority, application Germany, June 15, 1970, P 20 29 408.0
Int. Cl. B60t *15/52*
U.S. Cl. 303—70 **4 Claims**

A single release air brake for railroad vehicles has a double-pressure regulating valve connected between a brake cylinder and the main air line. First and second

auxiliary air reservoirs are also connected to the regulating valve. A single structural unit comprising a rapid braking accelerator and a switching device is connected to the regulating valve and through the regulating valve to the brake cylinder and to the second auxiliary air reservoir. The structural unit has a control piston and a valve piston displaceably mounted therein and having an abutment coupling therebetween. These pistons, in response to decreases in pressure in the main air line, operate valves which connect the first auxiliary reservoir to the braking cylinder upon a small lowering of pressure in the main air line occurring during operational braking. For rapid braking action, valves are opened in the unit to open the main air line to the atmosphere to quickly empty the main air line. The regulating valve is provided with a device for quickly refilling the second auxiliary reservoir from the main air line after a rapid braking operation.



3,701,571
BEARING ASSEMBLY
Herbert Percival Eck, 517 26th St., West Palm Beach, Fla. 33480
Filed May 28, 1971, Ser. No. 147,857
Int. Cl. F16c *17/10*
U.S. Cl. 308—18 **8 Claims**

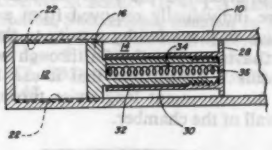


A bearing assembly in which opposite cheek plates include shafts having tapered bearing surfaces in sliding contact with tapered bearing surfaces on a roller. Annular recesses in the cheek plates compensate for wear of the bearing surfaces.

3,701,572
STRETCH SHOE STRING
Joe M. Velasquez, 9640 Wahoo Lane, El Paso, Tex. 79924
Filed June 22, 1971, Ser. No. 155,438
Int. Cl. A43c *1/00*
U.S. Cl. 24—117 A **1 Claim**

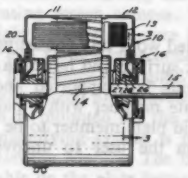
An improved shoe string for all various types of shoes, the device consisting of a shoe lace made of stretchable elastic material, the opposite ends of the shoe lace being provided with an interconnectable eye and hook, so to eliminate tying the ends with a knotted bow which frequently becomes accicentally untied; the present invention thus insuring a positive securement.

3,701,573
WARHEAD
William E. McQuistion, Port Tobacco, and Giorgio Tesi, Accokeek, Md., assignors to the United States of America as represented by the Secretary of the Navy
Filed Feb. 25, 1970, Ser. No. 17,991
Int. Cl. F42b *13/00*
U.S. Cl. 102—57 **3 Claims**



A warhead in which the explosive ingredients are stored separately in partitioned spaces to render each ingredient by itself inert to shock. The explosion is effected by removing the partition in response to the propulsion forces imparted upon the weapon and mixing the ingredients and igniting the mixture.

3,701,574
BEARING STRUCTURE
Benjamin Phillips, Owosso, Mich., assignor to Universal Electric Company, Owosso, Mich.
Filed Aug. 10, 1971, Ser. No. 170,441
Int. Cl. F16c *23/04*
U.S. Cl. 308—72 **12 Claims**

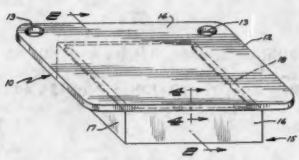


An electric motor comprises a motor housing, a stator and a rotor. The housing has an end wall with an opening therein and slots extending radially outwardly from the opening to define a plurality of cantilever mounted segments. Each segment has a first portion extending generally radially and a second portion forming a free end extending generally axially so that the segment is yieldable axially. The ends of the segments define a cylindrical supporting surface that engages a spherical contacting surface of a bearing member which has a bore therein for receiving the shaft of the rotor. Alternate segments have their free ends extending generally axially in opposite directions from adjacent segments.

3,701,575
FLUID DISPENSING DEVICE
Joseph B. Ringkamp, 515 Jefferson Ave., Morrisville, Pa. 19067
Filed Feb. 10, 1971, Ser. No. 114,322
Int. Cl. A47f 1/00
U.S. Cl. 312—45 **9 Claims**

A predetermined amount of a fluid material such as toothpaste, hand cream, perfume or the like is dispensed in the form of an elongated capsule adapted to be squeezed to discharge the fluid material for use. The capsules are individually removed from a dispensing device in which they are fed by gravity to the lower end of a chamber having a slot therein through which a portion of the capsule is exposed so that it can be engaged by the finger for movement lengthwise through an opening in an end wall of the chamber.

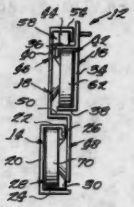
3,701,576
LAP SUPPORTED WORK TRAY
Carl D. Moen, 24 66½ Way, Minneapolis, Minn. 55432
Filed Dec. 4, 1970, Ser. No. 95,098
Int. Cl. A47b 27/00, 81/00, 97/00
U.S. Cl. 312—231 **1 Claim**



A lap supported work tray consisting of a plate member forming a work surface and having a drawer thereunder, said drawer being lap supported and said drawer supporting said plate member with a pair of slide members arranged for said plate member to be movable in a direction away from the user to uncover said drawer for access thereto.

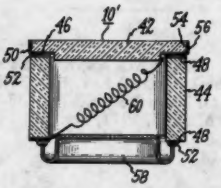
3,701,577
DRAWER SLIDE ASSEMBLY
Jack Fischer, Mount Prospect, Ill., assignor to Advertising Metal Display Co., Chicago, Ill.
Filed Oct. 12, 1970, Ser. No. 79,932
Int. Cl. A47b 88/10
U.S. Cl. 312—339 **20 Claims**

The drawer slide assembly comprises a cabinet runner, a drawer runner and an intermediate slide member. The cabinet and drawer runners each have longitudinally extending guideways, and the intermediate slide member has a pair of longitudinally extending parallel sections, the top section of which carries a roller and has a longitudinally extending guideway. The cabinet runner has a roller which is disposed within the guideway of the slide member top section, and the roller of the slide member top section is disposed within the guideway of the cabinet runner. The slide member bottom section carries a pair of rollers which



are disposed within the roller guideway of the drawer runner. Interengageable formations on the cabinet and cabinet runner facilitate the installation of the drawer slide assembly.

3,701,578
METHOD OF MAKING CERAMIC ELECTRICAL DEVICE
Roger A. Krey, Mirror Lake, N.H. 03853
Original application Feb. 28, 1966, Ser. No. 530,716. Divided and this application Jan. 31, 1969, Ser. No. 795,459
Int. Cl. H01j 9/18
U.S. Cl. 316—19 **3 Claims**

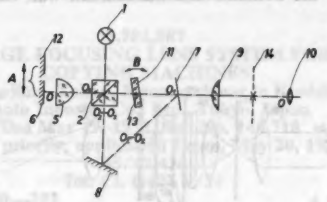


A method of making a ceramic light bulb or other electrical device having a ceramic envelope portion formed of a translucent ceramic material and a metal closure member. The ceramic material is metalized in desired areas. The metal closure member is assembled with the ceramic envelope and a filament is mounted within the envelope with opposite ends in contact with metalized portions of the envelope. Brazing metal is placed at all contact areas between the envelope and the closure member. The assembly is then heated in a furnace at a temperature and time sufficient to braze the assembly into an hermetically sealed device.

3,701,579
HOLOGRAPHIC INTERFERENCE MICROSCOPY
Friedrich Zollner, Jena, Germany, assignor to Jenoptik Jena G.m.b.H., Jena, Germany
Filed Jan. 29, 1971, Ser. No. 103,358
Int. Cl. G02b 21/00, 27/00
U.S. Cl. 350—12 **4 Claims**

In an interferometer system for micro-observation in incident light, a reference beam and a specimen beam interfere in a hologram which represents an interference image due to superposition of said two beams on

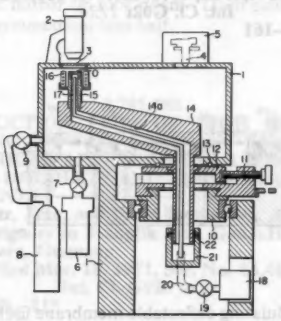
one another and substitution of a plane mirror for the specimen under observation. If the magnification is varied by changing the objective, the hologram must also be changed.



3,701,580
DEVICE FOR QUENCHING AND COOLING A SPECIMEN IN A HIGH-TEMPERATURE MICROSCOPIC VIEWING SYSTEM

Masaru Sobajima, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 16, 1971, Ser. No. 208,697
Claims priority, application Japan, Dec. 24, 1970, 45/116,648
Int. Cl. G02b *21/28, 21/30*
U.S. Cl. 350—90 3 Claims



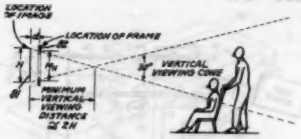
In a high-temperature microscopic viewing system a specimen heating furnace is installed around the specimen and is in the form of a hollow cylinder having one end thereof closed to provide a test surface, and a cylindrically shaped specimen holder open at opposite ends carries the specimen on top thereof, the hollow interior of the holder communicating with the exterior of the hermetically sealed chamber while maintaining a gas-tight seal with respect to the interior of the chamber. A pipe extends through the holder along the length thereof for passing a coolant from the exterior of the hermetically sealed chamber to the inner side of the test surface of the specimen.

3,701,581
STEREOSCOPIC ENHANCEMENT OF PICTORIAL DISPLAYS

John L. Henkes, Jr., Loudonville, N.Y., assignor to General Electric Company

Filed Nov. 15, 1971, Ser. No. 198,523
Int. Cl. G02b *27/22*
U.S. Cl. 350—144 4 Claims

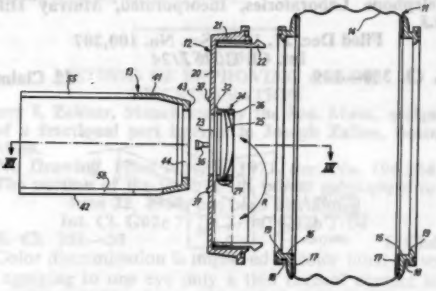
Methods and apparatus are described for enhancing the stereoscopic information content of a two-dimensional display surface so that stereoscopic information is perceived with the realism of the original scene. The apparatus includes a stereographic frame surrounding the display and spaced therefrom. The frame, including means for decreasing the scene brightness at a non-linear rate, disassociates the display from the surrounding environment by defocusing the edge of the frame so that it is difficult for the mind of the viewer to determine the distance "*d*" between the frame and the display surface. Suitable spacings *d* range between approximately *W*/40 and *W*/5, where W is equal to the width of the display surface.



3,701,582
OPTICAL ATTACHMENT FOR VIEWING A FOCUSING SCREEN OF A CAMERA

Carl Koch, Stetten, Switzerland, assignor to Sinar AG Schaffhausen, Feuerthalen, Switzerland

Filed Jan. 8, 1971, Ser. No. 105,042
Int. Cl. G02b *27/04, 23/18, 23/20*
U.S. Cl. 350—145 4 Claims



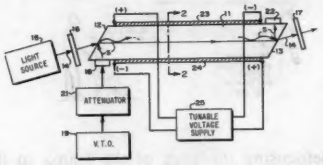
An optical attachment for viewing the focusing screen of a large-size focusing screen camera. The attachment comprises a light-tight bellows structure including a pair of spaced, opposed end frames interconnected by a flexible bellows. One of the frames is adapted to be releasably attached to a focusing screen and a plate having a viewing window therein is mounted on the other frame. A binocular optical magnifying system is mounted on the plate adjacent the viewing window. The binocular system is selectively swingable on the plate between an operative viewing position in front of said window and an inoperative posltion away from the window. The optical attachment includes an external lever which is operably connected with the binocular system for moving the binocular system between its operative and inoperative positions. The attachment also includes a tunnel-shaped shield having spaced, opposed open ends. One of the ends of the shield being releasably secured to the plate in surrounding relationship to the window and the other end being shaped to complementally accommodate the head of a photographer. The bellows is relatively self-supporting and laterally and longitudinally flexible to allow both perpendicular and parallel movement of the plate and the shield relative to the focusing screen.

3,701,583

ACOUSTO-OPTICAL FILTER HAVING SCANNED ACOUSTIC FREQUENCY COMPENSATED BY CONTROLLED DISTRIBUTED BIREFRINGENCE

Donald L. Hammond, Los Altos Hills, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 14, 1970, Ser. No. 97,523
Int. Cl. G02f 1/24
U.S. Cl. 350—149 12 Claims



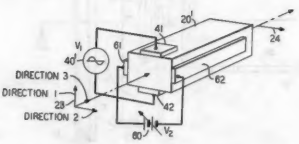
An electronically tunable acousto-optic filter is scanned over a wide range of optical frequencies by varying the acoustic frequency and is provided with means for controllably varying the birefringence of the filter medium along the length thereof to compensate for acoustic *k* vector distribution, thereby increasing the rate at which the filter may be scanned.

3,701,584

TUNED VOLTAGE VARIABLE BIREFRINGENT ACOUSTO-OPTICAL FILTER

Peter Klaus Runge, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1970, Ser. No. 100,207
Int. Cl. G02f 1/24
U.S. Cl. 350—149 12 Claims



A voltage tunable acousto-optical filter with reduced power requirements acts as a bandpass optical filter with its center frequency determined by a DC voltage source. Prior art acousto-optical filters rely on the natural birefringence of the filter crystals, hence a change in the output optical frequency is accomplished by a change in the acoustical frequency established in the crystal. However, the acoustical frequency can be fixed and the output optical frequency changed by varying the birefringence of the crystal with the application of a voltage to a set of electrodes on the crystal.

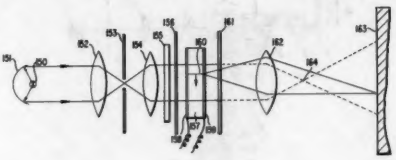
3,701,585

OPTICAL LINE SCANNER USING THE POLARIZATION PROPERTIES OF FERROELECTRIC-FERROELASTIC CRYSTALS

John R. Barkley, James J. O'Reilly, and Robert K. Waring, Jr., Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 26, 1971, Ser. No. 119,237
Int. Cl. G02f 1/26
U.S. Cl. 350—150 34 Claims

In certain ferroelectric-ferroelastic crystals, the domains are biaxially birefringent. The region of a linear domain wall dividing adjacent domains transmits polarized light having a substantial component wherein the polarization direction is unchanged. With appropriate polarization filtering the difference in polarization properties of the domains and the domain wall can be used



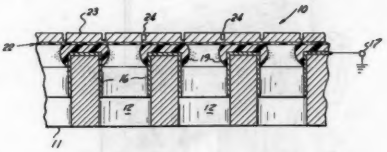
to generate a dark line on a light field or a light line on a dark field corresponding on the domain wall. The domain wall, and the corresponding optical line can be moved in response to electrical or mechanical control signals to provide an optical line scanner.

3,701,586

LIGHT MODULATING DEFLECTABLE MEMBRANE

George G. Goetz, 27992 Green Willow, Farmington, Mich. 48024

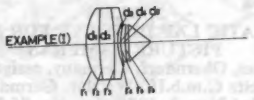
Filed Apr. 21, 1971, Ser. No. 136,012
Int. Cl. G02f 1/34
U.S. Cl. 350—161 11 Claims



A light modulating deflectable membrane useful in modulating light is described. A deflectable membrane is applied to the surface of a microchannel plate (MCP) so that the membrane extends over the entire surface of the MCP, including the output openings of the channels. The membrane is made reflective by the application of an array of symmetrically arranged elements which are formed from a light reflective material. Electrical separation of the membrane and MCP is achieved by a thin insulating film which is interposed between the membrane and the MCP. The surface of the MCP is placed at ground potential, while the membrane is normally neutral. In this condition the structure is a planar mirror. When electrons are directed to the structure, a charge accumulates on the membrane and forms a pattern dictated by the signals applied to the electron gun. Electrostatic attraction between the MCP surface and the accumulated charges causes deflection of the membrane into the MCP channels. Accordingly, light impinging upon the membrane is phased modulated by dimples in the membrane as electrostatic attraction occurs. Because the deflection at each dimple is dependent upon the charge placed there by the electron gun, and because the charge from the electron gun is dependent upon its energizing signals, image informations contained in the electronic signals is reproduced in the phase of the light reflected from the dimpled membrane. Holographic reconstructions can be produced by

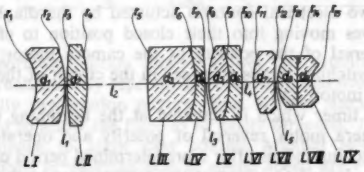
energizing the electron gun with electrical signals representative of the interference pattern of a hologram and then illuminating the dimpled surface with coherent energy.

3,701,587
IMAGE FOCUSING LENS SYSTEM FOR COPYING MACHINES
Tadashi Kojima, Tokyo, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed May 19, 1971, Ser. No. 144,718
Claims priority, application Japan, May 20, 1970, 45/42,436
Int. Cl. G02b 9/58
U.S. Cl. 350—202 4 Claims



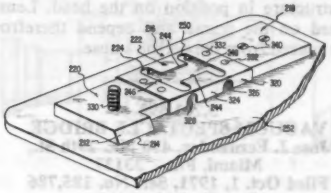
A new system for copying machines, including an image focusing lens system is now proposed. The said image focusing lens system which is the subject matter of the present application has a bright F number as large as about 4 and is well compensated in aberration. The image focusing lens system incorporates a substantially symmetrical image focusing lens construction or a symmetrical half of the focusing lens construction with the addition of a plane mirror, roof mirror or roof prism (Dach prism) disposed behind the symmetrical lens half.

3,701,588
REPRODUCTION LENS OF HIGH IMAGE-RESOLVING POWER WITH AN IMAGE-SIDE NUMERICAL APERTURE OF 0.5 COMPRISING THREE DOUBLETS AND THREE SINGLE LENS ELEMENTS
Doris Trebitz, Jena, and Ernst Rumpoldin, Apolda, Germany, assignors to Jenoptik Jena G.m.b.H., Jena District of Gera, Germany
Filed Mar. 18, 1971, Ser. No. 84,469
Int. Cl. G02b 9/62
U.S. Cl. 350—215 1 Claim



A reproduction lens of high image-resolving power comprises three doublets and three single lens elements, I, II, III/IV, V/VI, VII, VIII/IX from object side to image side, and is divided into three groups. The first group consists of the elements I and II, I being a dispersive meniscus, and II being a convergent element. The second group consists of the two cemented convergent doublets III/VI and V/VI, whereof the single elements III and V are convergent and the single elements IV and VI are divergent. The third group consists of the convergent element VII and the cemented thick meniscus VIII/IX. The lens aperture is 0.5. The focal length of the lens is 15 mm. The image scale is 1:15. The lens is suitable for microphotographic techniques and micro-wave circuits.

3,701,589
VARIABLE WIDTH SLIT MECHANISM FOR USE IN A SCANNING MONOCHROMATOR
Jack A. Haines, Champaign, Ill., assignor to Heath Company, St. Joseph, Mich.
Filed Nov. 8, 1968, Ser. No. 774,301
Int. Cl. G02f 1/30; G01j 3/12
U.S. Cl. 350—271 3 Claims

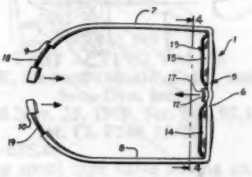


In a scanning monochromator of the diffraction grating type, an improved slit mechanism is provided adjacent the monochromator entrance and exit ports. Each slit mechanism includes a pair of closely spaced parallel slit edges and, additionally, incorporates a parallelogram arrangement. The parallelogram arrangement permits the slit edges forming a slit to be moved relatively toward and away from one another to vary the slit width, but the edges are always maintained in very accurate parallelism. A unique drive arrangement connects the inlet port slit mechanism and the outlet port slit mechanism so that an increase or decrease in the slit width of one causes a corresponding increase or decrease in the slit width of the other. A further unique drive arrangement permits the diffraction grating to be adjusted at either normal scanning speed or at rapid speed.

3,701,590
METHOD OF IMPROVING COLOR DISCRIMINATION
Harry I. Zeltzer, Manchester by the Sea, Mass., assignor of a fractional part interest to Joseph Zallen, Boston, Mass.
No Drawing. Filed Nov. 8, 1971, Ser. No. 196,584
The portion of the term of the patent subsequent to June 22, 1988, has been disclaimed
Int. Cl. G02c 7/10, 7/04; G02b 1/04
U.S. Cl. 351—39 1 Claim

Color discrimination is improved in color blind persons by applying to one eye only a thin corneal contact lens transmitting light substantially only in the red zone and having light transmission in excess of approximately 40%.

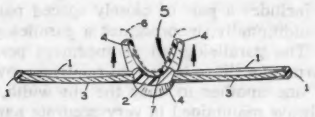
3,701,591
HEAD ENGAGING SPECTACLE STRUCTURE
Max F. Wichers, Main Mall, White Lake Center, 3636 Topeka Blvd., Topeka, Kans. 66611
Filed Mar. 29, 1971, Ser. No. 128,927
Int. Cl. G02c 3/00
U.S. Cl. 351—41 6 Claims



A spectacle structure having portions engaging spaced parts of the head of a person to support same in proper position and includes a frame having a front positioning

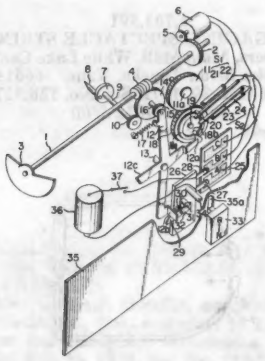
member engageable with a brow of the person and temple members extending rearwardly from the front positioning member and having portions shaped to engage the back portion of the head. The end portions of the temple members engage the head adjacent and below an occipital prominence and at a respective side of the head of a person wearing the spectacle structure to cooperate with the brow engagement of the front member to maintain the spectacle structure in position on the head. Lens means are mounted on the frame and depend therefrom with connectors spaced from the person's nose.

3,701,592
VACUUM SPECTACLE BRIDGE
Jose J. Fernandez, 430 NE. 29th St., Miami, Fla. 33137
Filed Oct. 1, 1971, Ser. No. 185,786
Int. Cl. G02c *5/02*
U.S. Cl. 351—130 **3 Claims**



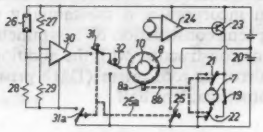
A pair of spectacles provided with a nose bridge specifically contoured to conform to the upper nose of the wearer with a central portion of the bridge made from plastic or metal alloy material including a U shaped cavity forming a vacuum around a portion of the nose for retaining the spectacles in their normal position. The spectacles are attached by modest pressure at the bridge without the deforming permanent pressure of the pincenez type bridge and without the well known ear bows. This invention also includes the process of manufacture for custom fitting to each wearer.

3,701,593
SAFETY DEVICE FOR A NORMAL-TO-REVERSE ROTATION CHANGE-OVER SWITCH IN A MOVIE CAMERA
Hideyo Nozawa, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Sept. 10, 1971, Ser. No. 179,417
Claims priority, application Japan, Sept. 30, 1970, 45/96,787
Int. Cl. G03b *21/36*
U.S. Cl. 352—91 **4 Claims**



A safety device for preventing a normal-to-reverse change-over switch from being inadvertently changed over to a position causing reverse rotation of a prime mover in a movie camera. The change-over switch is in a motor circuit of the movie camera and includes a slide provided with a lock member which is spring-biased for pivoting in one direction. A clutch member is pivotally mounted to the body of the camera so as to be selectively displaceable into a first position for transmitting the rotation of the prime mover to a film take-up mechanism and into a second position for transmitting the rotation of the prime mover to a film length determining means. The clutch member has one end thereof adapted to engage one end of the lock member when the clutch member is in its first position, preventing the change-over switch from changing into a position causing reverse rotation of said prime mover.

3,701,594
AUTOMATIC LAP DISSOLVE FOR MOTION PICTURE CAMERAS
Heinz Keiner, Oberndorf, Germany, assignor to Ernst Leitz G.m.b.H., Wetzlar, Germany
Filed Nov. 2, 1970, Ser. No. 85,950
Claims priority, application Germany, Aug. 17, 1970, P 20 40 727.6
Int. Cl. G03b *21/36*
U.S. Cl. 352—91 **2 Claims**



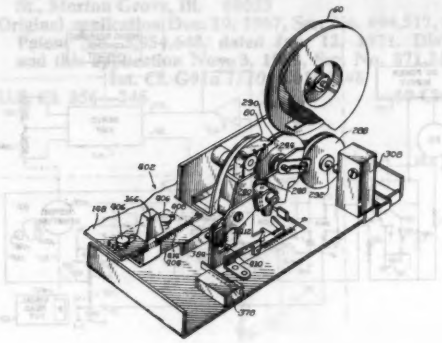
Automatic lap dissolve mechanisms are provided in motion picture cameras having an electronic film drive, a diaphragm with leaves positioned in the light path of the camera, current controlled diaphragm control means coupled to the diaphragm and photo resistor means positioned in the light path from an object to be photographed and connected to the diaphragm control means for varying the magnitude of current in the diaphragm control means and thereby varying the opening of the diaphragm in accordance with the intensity of light in the light path from the object to be photographed. The automatic lap dissolve mechanism includes:

(a) two electrical contacts actuated by the diaphragm leaves moving into their closed position to effect a reversal of the polarity of the camera motor;
(b) switching means arranged in the circuit of the camera motor; and
(c) a timer which is actuated at the beginning of the camera motor reversal of polarity and operates the switching means after a predetermined period of time has elapsed to interrupt the current flow to the camera motor.

3,701,595
MOTION PICTURE PROJECTOR
Jack W. Thomsen, La Grange Park, Arthur E. Nupnau, Chicago, Raymond W. H. Kim, Morton Grove, and Jaroslav Cherniavskyj, Skokie, Ill., assignors to Bell & Howell Company, Chicago, Ill.
Original application Nov. 19, 1968, Ser. No. 777,018, now Patent No. 3,635,548. Divided and this application Jan. 28, 1971, Ser. No. 110,618
Int. Cl. G03b *1/58*
U.S. Cl. 352—124 **7 Claims**

A motion picture projector with means for automatically threading a filmstrip through the gate to a take-up reel and for rewinding the filmstrip after projection. A

roller acts against the outside convolution of the film upon the reel during the threading phase and upon the reel itself during the rewinding phase. A solenoid through its plunger and a linkage shifts the roller from its inactive



positions to its active positions during threading and rewind. The solenoid coil is slidably mounted so that when energized it activates another linkage to open up the film path during threading and rewind.

3,701,596

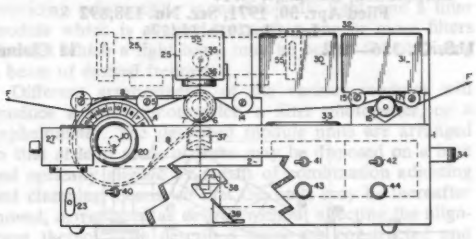
PORTABLE DUAL MOTION PICTURE VIEWER

Benjamin T. Hill, Jr., 6842 Ranchito Ave., Van Nuys, Calif. 91405

Filed Jan. 11, 1971, Ser. No. 105,293

Int. Cl. G03b *21/00*

U.S. Cl. 352—129 **6 Claims**



A portable motion picture viewer for simultaneously and synchronously reproducing both sight and sound from typically two motion picture films. A dual lamphouse is pivoted to allow the films to be easily threaded. The films are aligned to allow easy editing. Manual advance of both films or reproduction at sound speed are available. Typically each film is exhibited on separate side-by-side screens, but the views may be super-imposed to accomplish dissolves. A modification provides three-dimensional viewing. A third sound track may be mixed-in.

3,701,597

MOVIE CAMERA WITH CAM-DRIVEN GRIPPER

Heinz Keiner, Oberndorf, and Wilhelm Schafer, Wetzlar, Germany, assignors to Ernst Leitz G.m.b.H., Wetzlar, Germany

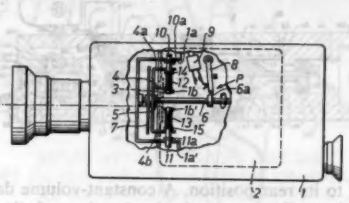
Filed Mar. 6, 1972, Ser. No. 231,926

Claims priority, application Germany, Mar. 11, 1971, P 21 11 703.3

Int. Cl. G03b *1/22*

U.S. Cl. 352—194 **3 Claims**

In a movie camera the cam-driven gripper is under the influence of spring means for eliminating the play in the gearing between the driving motor and the gripper. The spring means comprise a first and a second spring. Both springs are arranged symmetrically to the gripper path. The first spring acts on the gripper only at the end of the down stroke and the second spring acts on the



gripper only at the end of the up stroke. It is thereby achieved that the gripper is not under a spring load in its rest position and during most of its travel, and still the advantage of the spring influence, i.e. a good picture steadiness is maintained.

3,701,598

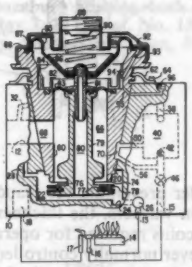
FLOW CONTROL DEVICE WITH PRESSURE REGULATION

Jay R. Katchka, 3535 Ely Ave., Long Beach, Calif. 90808

Filed June 26, 1968, Ser. No. 740,150

Int. Cl. F23d *5/16*

U.S. Cl. 137—599 **12 Claims**



A flow control device having a manually operable valve movable between a plurality of controlling positions for delivering fluid flows to main and pilot outlets; a pressure regulator assembly downstream of the manually operable valve regulates the pressure of the pilot flow and the manually operable valve selectively permits the pilot flow to bypass the pressure regulator as well as the main flow. Upstream of the pilot flow outlet the pilot flow line is provided with restricting orifices to prevent an excess of a non-regulated pilot flow and to dampen a regulated pilot flow as is necessary during initial compensation of the regulator.

3,701,599

FAST ACTING VALVE

William K. Stewart, Ontario, Calif., assignor to Seco-Dyn, Inc.

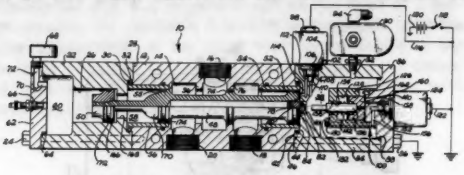
Filed Nov. 25, 1970, Ser. No. 92,134

Int. Cl. F16k *11/02*

U.S. Cl. 137—625.48 **11 Claims**

A fast acting spool type valve having an inlet port, a normally open outlet port and a normally closed outlet port. Low pressure is applied to continuously urge the spool assembly to a forward position in communication with a high pressure chamber to an extent insufficient to overcome the low pressure force. A solenoid valve,

aided by an electromechanical booster, shifts the spool to apply the high pressure against a portion of the spool sufficient to overcome the forward pressure and accelerate

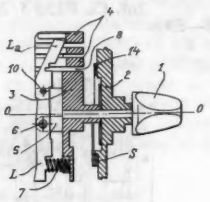


the spool to its rear position. A constant-volume dampening chamber effects smooth deceleration of the spool assembly.

3,701,600
COIN SIZE TESTER PREVENTING FRAUDULENT OPERATION OF PARKING METERS

Francis Jacques Guillot, "Le Cirius," bloc D, Les Constellations de Fabron, 56 Avenue Joseph Jourdan, 06200 Nice, France

Filed Dec. 11, 1970, Ser. No. 97,246
Claims priority, application France, Jan. 23, 1970, 7002356
Int. Cl. G07f *5/02*
U.S. Cl. 194—74 **4 Claims**



A parking meter preventing the fraudulent use of false coins such as iron washers, the thickness of which is less than that of the coins required for operation of the latter; to this end, the lever normally controlled by the coin upon abutment against a stop at the end of its travel so as to operate the mechanism of the meter, is provided in registry with the coin-receiving slot with a notch the breadth of which is smaller than the thickness of the required coins; thus, the notch does not prevent normal operation of the lever by said required coin, but is engaged by the thinner false coin the shifting of which by the stop cannot therefore act on the lever.

ERRATUM

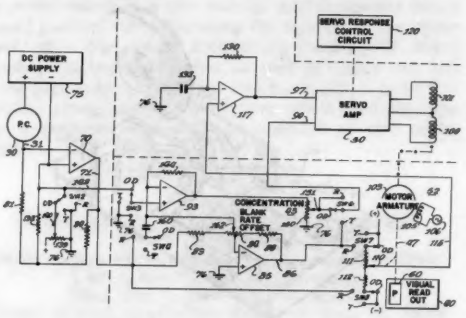
For Class 356—246 see:
Patent No. 3,701,620

3,701,601
PHOTOMETRIC READ OUT AND ANALYZING SYSTEM

William H. Plumpe, Jr., and Theodore E. Weichselbaum, St. Louis, Mo., assignors to Sherwood Medical Industries, Inc.

Continuation of application Ser. No. 710,161, Mar. 4, 1968. This application Sept. 17, 1970, Ser. No. 73,269
Int. Cl. G01j *3/42, 3/46;* **G06f** *15/20*
U.S. Cl. 356—96 **16 Claims**

A servomechanism system coupled to a spectrophotometer provides direct read out of the transmittance of a solution being analyzed. Circuits selectively connectable in the system convert transmittance into the nonlinear functions of optical density, concentration and rate of

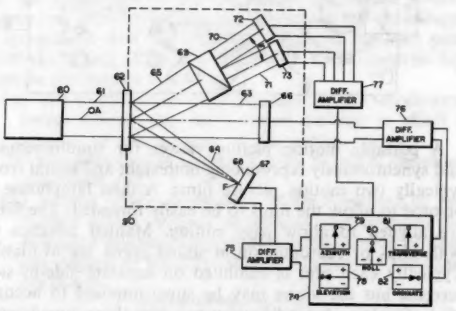


chemical reaction, which are also directly read out by the servomechanism. Additional circuits provide noise suppression and cause the servomechanism to be responsive to the time duration an input is off null.

3,701,602
MULTI-AXIS OPTICAL ALIGNMENT SYSTEM INCLUDING A SPATIAL FILTER

Michael T. Bergin, Whitestone, and Charles S. Bartolotta, Nesconset, N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Apr. 30, 1971, Ser. No. 138,892
Int. Cl. G01b *11/27*
U.S. Cl. 356—152 **11 Claims**



A multi-axis optical alignment system using a holographic lens. A spatially filtered, collimated beam of light is divided by the holographic lens into three distinct paths; an undiffracted beam, a converging beam, and a diverging beam. The undiffracted beam intercepts a position-sensitive photodetector to monitor linear displacement and the converging beam is focused on a similar detector to monitor angular displacement. The diverging beam is directed through a Wollaston Prism and detector arrangement to monitor displacement about the roll axis. Two methods for making the holographic lens used in the system are disclosed.

3,701,603

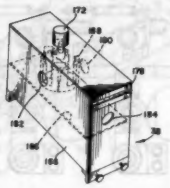
COMBINATION TEACHING AID AND MODULAR INSTRUMENTAL ANALYSIS SYSTEM AND COMPONENTS THEREFOR

Roy E. Boostrom, 898 Chatham Ave., Elmhurst, Ill. 60126; Arman Mandell, 6126 N. Harding Ave., Chicago, Ill. 60624; and Lewis Malter, 7741 W. Davis St., Morton Grove, Ill. 60053

Original application Dec. 29, 1967, Ser. No. 694,517, now Patent No. 3,554,648, dated Jan. 12, 1971. Divided and this application Nov. 3, 1969, Ser. No. 871,249

Int. Cl. G01n *1/10;* G01j *3/48*

U.S. Cl. 356—246 10 Claims



A combination teaching aid and modular instrumental analysis system in which a plurality of modules are provided, each having a separate function, and in which the different modules are adapted to be placed together in different combinations to provide different optical analysis instruments. The modules include a light source for providing light, a detector module for receiving light which has been exposed to a sample compartment module which receives one or more samples to be analyzed, and may include display means in the form of a meter or the like for reading the output of the detector module. The combination may also include a monochromator unit for providing substantially monochromatic light, and a filter module which is adapted to contain one or more filters through which a light beam may be passed for obtaining a beam of desired frequency.

Different arrangements of the various modules will produce a spectrophotometer, a filter photometer, or a nephelometer. The described module units are arranged so that at least some of them may be disposed on a base and optically aligned by means of combination adjusting and clamping means, so that the units may be thereafter moved, or replaced as desired without affecting the alignment thereof. The described units are constructed and arranged so that all the significant operational and functional properties of each module may be directly observed by the student. Therefore, each module is adapted to perform a minimum number of functions, and the modular concept and the construction features are used as a teaching aid used to emphasize the relation between various systems of optical instrumental analysis.

The filter compartment module and the sample compartment module include holder means for holding light filters or sample units, and the holder unit is constructed so as to facilitate interchange of sample holders and filter units, and to be adapted for use without change to perform different functions in different instrumental combinations.

3,701,604

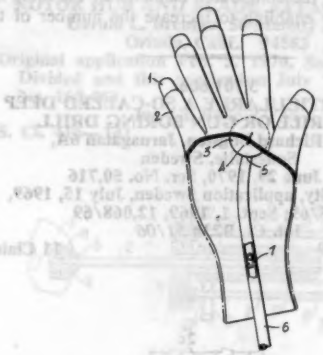
APPLICATOR FOR LIQUIDS

John Holroyd, Oxford, England, assignor to National Research Development Corporation, London, England

Filed May 26, 1970, Ser. No. 40,554

Int. Cl. A46b *5/04*

U.S. Cl. 401—7 12 Claims



A device for the manual application of a liquid over a surface comprising a glove having absorbent material on the outside and front thereof and adapted for connection to passage means for supplying a controlled flow of liquid from a reservoir to the absorbent material beneath the outer surface thereof, the absorbent material being such that the liquid is expressible through the material on to its outer surface by manual pressure.

3,701,605

FILING IMPLEMENT

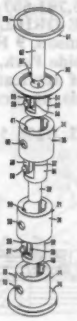
Yoshio Morishima, Osaka, Japan, assignor to Ryoji Shibata, and Zenzaburo Shibata, both of Osaka, Japan

Filed May 3, 1971, Ser. No. 139,450

Claims priority, application Japan, May 6, 1970, 45/44,219

Int. Cl. B42f *3/04*

U.S. Cl. 402—58 8 Claims



A filing implement for use in filing a pile of mounts in an album or the like, enabling to increase the number of the piled mounts by consecutively increasing elements of said filing implement inserted through each penetration bore provided in the piled mounts of the album, a coupling element, an extension element, and a base element which last comes undermost being detachably coupled together and inserted through each penetration bore of the filed mounts from the bottom thereof, a filing element being fitted from the top of said penetration bore thereby detachably coupling said filing element with the extension element, said pile of mounts being retentively secured between a flange provided on the base element

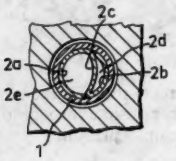
and a flange provided on the filing element respectively, each of said elements being integrally and retentively coupled together by fitting a lock pin into the filing element, the length of the filing implement being increased, if necessary, by coupling a plurality of extension elements alone among all the component elements of the filing implement thereby enabling to increase the number of the piled mounts.

3,701,606

DRILL, PARTICULARLY A SO-CALLED DEEP HOLE DRILL OR GUN BORING DRILL

Anders Richard Bogsten, Jarnagatan 6A, Sodertalje, Sweden

Filed June 29, 1970, Ser. No. 50,716
Claims priority, application Sweden, July 15, 1969, 9,975/69; Sept. 1, 1969, 12,068/69
Int. Cl. B23b *51/06*
U.S. Cl. 408—59 **11 Claims**



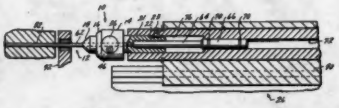
A drill, particularly a gun boring drill, comprising a drill tube provided with two internal axial flow channels separated by a partition wall having its side edges located at two spaced positions along the inner circumference of the drill tube, one channel being intended for supply of flushing medium and the other channel for discharge of borings together with flushing medium.

3,701,607

DEEP HOLE DRILLING TOOL

Robert C. Johnson, 9 Flower Court, Lakeside Park, Ky.

Continuation-in-part of application Ser. No. 783,644, Dec. 13, 1968. This application Oct. 23, 1970, Ser. No. 83,329
Int. Cl. B23b *51/06*
U.S. Cl. 408—59 **2 Claims**



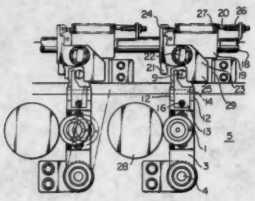
A deep hole drilling tool which includes a cutting tip brazed to an elongated shank, a second shank integrally formed upon the first and having a greater diameter thereover, and a third shank integrally formed upon the second shank and having a greater diameter therefrom. A pair of O-rings are spacedly mounted in their respectively annular grooves about the periphery of the third shank whereby upon insertion of the third shank in a spindle mounted in a stock of a tooling machine, seepage of coolant and lubricating oil about the tool's shank is prevented and all such oils flows within the tube's bore to the cutting tip itself.

3,701,608

TEXTILE-FORWARDING UNITS WITH PRESSURE ROLLERS OPERABLE JOINTLY AND INDIVIDUALLY

Sadao Sanjo, 1–2750 Oaza-minamiyoshida; and Hiroshi Yamada, 2901 Oaza-minamiyoshida, both of Matsuyamashi, Japan; and Yoshio Gono, 4–10 Oaza-monzen, Iwakuni-shi, Japan

Filed Apr. 13, 1970, Ser. No. 27,681
Claims priority, application Japan, Apr. 19, 1969, 44/30,446
Int. Cl. B65h *17/22*
U.S. Cl. 226—155 **4 Claims**



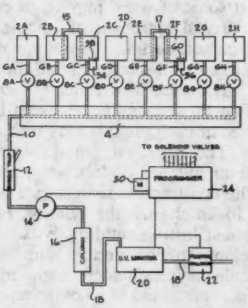
Apparatus for engaging or disengaging driven pressure rollers with rotating driving rollers provided in a plurality of the yarn-forwarding units. The former rollers are engaged or disengaged with the latter rollers by the movement of a single common shaft in all units and in case of an accident one or more driven rollers are engaged or disengaged individually with the driving rollers without the movement of the shaft.

3,701,609

APPARATUS FOR AUTOMATICALLY ADDING PRESELECTED PATTERNS OF ELUENT SOLUTIONS TO A CHROMATOGRAPHIC COLUMN AND MONITORING AND COLLECTING ELUTED FRACTIONS

David G. Bailey, 789 St. Davids Ave., Warminster, Pa. 18974

Filed May 13, 1971, Ser. No. 142,952
Int. Cl. B01d *15/08*
U.S. Cl. 210—198 C **2 Claims**



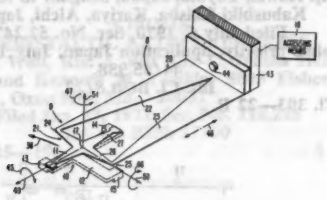
An apparatus for automatically adding eluent solution to a chromatographic column according to a preselected stepwise or gradient addition pattern or combinations of stepwise and gradient addition patterns and for automatically controlling the operation of accessory and eluate monitoring and collecting equipment. A programmer is electrically connected by a number of circuits and relays to a programmer motor, solenoid valves, a pump and accessory and monitoring equipment and is preset to make the proper contacts necessary to accomplish any desired sequence of eluent additions and eluate collections and to monitor the eluates by a variety of instruments.

3,701,610

SUSPENSION SYSTEM FOR HOLDING A SLIDER

Walter S. Buslik, San Jose, and Albert S. Chou, Monte Sereno, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1970, Ser. No. 99,976
Int. Cl. G11b 5/60
U.S. Cl. 248—204 12 Claims



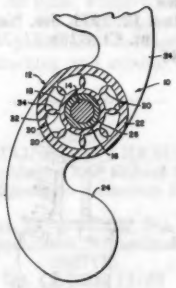
This invention teaches an assembly for holding a transducer-carrying T-shaped slider in compliance with a moving magnetic medium. The assembly comprises a suspension system including a flexure supporting the slider for allowing the slider to have freedom in pitch and roll and maintaining the slider in a constant yaw position, and a flexible supporting structure joined to the flexure. The supporting structure becomes stiff in the direction of access under load.

3,701,611

MARINE PROPELLER WITH RESILIENT HUB STRUCTURE

Ralph E. Lambrecht, Lake Bluff, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 21, 1970, Ser. No. 99,882
Int. Cl. B63h 21/26
U.S. Cl. 416—134 6 Claims



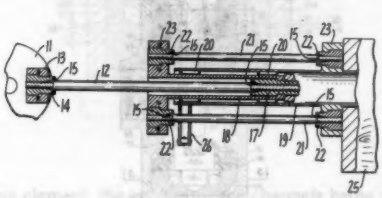
A marine propeller and hub structure for absorbing sudden rotational loads which may be applied to the propeller when it strikes a submerged object. The hub structure for the propeller includes an inner hub, a plurality of ribs extending radially outwardly from the inner hub and an outer hub joined to the inner hub by the radially extending ribs. The propeller assembly is completed by a plurality of blades extending outwardly from the outer hub. The ribs of the hub structure are flexible enough to provide a resilient cushioning effect in the propeller hub structure when a blade strikes an underwater obstacle.

3,701,612

ROTOR HUB AND BLADE ATTACHMENTS

Gerald L. Breuner, 50 Melody Lane, Orinda, Calif. 94563

Original application Feb. 3, 1970, Ser. No. 8,232. Divided and this application July 7, 1971, Ser. No. 160,483
Int. Cl. B64c 27/38
U.S. Cl. 416—141 5 Claims



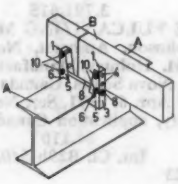
This invention relates to an improved attachment for a rotor blade in a rotating wing aircraft having a semi-rigid rotor system. More particularly, the invention provides a low cost, lightweight, low maintenance rotor system embodying all of the desired characteristics of the semi-rigid hub but with a minimum chance of fatigue or failure.

3,701,613

BUILDING FRAME BRACKETS

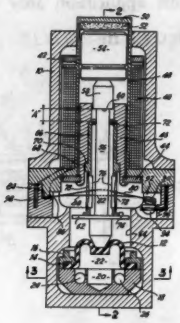
Arthur Raymond Turner, 69 Church Road, Taradale, Napier, New Zealand

Filed Sept. 14, 1970, Ser. No. 72,005
Claims priority, application New Zealand, Sept. 22, 1969, 157,287
Int. Cl. F16b 2/06
U.S. Cl. 287—189.36 C 1 Claim



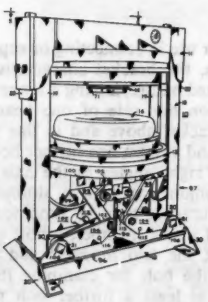
A bracket for use in connecting or supporting metal and other members, the bracket characterised by being of a vertical elongated nature, having a lower open slot adapted for mounting on one side of one beam, a hole passing through the bracket above and in line with the depth of the open slot, and at least one further hole passing through the bracket at right angles to the axis of the first hole, whereby in conjunction with a similar opposite-handed bracket, each bracket may be mounted by its open slot on one edge of a first member, a bolt passed through the lower holes of the two brackets and secured by a nut screwed onto the bolt for clamping the brackets to the first member, at least a further bolt passed the further hole of each bracket and through a hole in a second member or members and secured by a nut to connect or link the members together.

3,701,614
ELECTROMAGNETIC PUMP
Charles Guidicelli, Bagnolet, France, assignor to Societe Anonyme STOP
Filed May 4, 1971, Ser. No. 140,038
Claims priority, application France, May 5, 1970, 7016322
Int. Cl. F04b *43/04*
U.S. Cl. 417—413 **3 Claims**



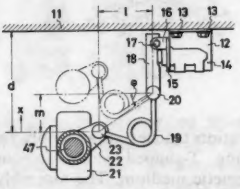
Reciprocating electromagnetic pump comprising a pump element the elastically returned diaphragm of which displaces fluid between a suction valve and a delivery valve, an electromagnet core connected by a rod to the said diaphragm to deform the latter when the electromagnet is energized and a switch tripped by the rod at the end of the operative stroke of the said core to interrupt the energization of the electromagnet and permit the elastic return of the said diaphragm into a rest position. The rod controls the displacements of an element associated with the switch and is connected elastically to the casing of the pump so as to be able to occupy, by sudden tripping, two stable positions respectively in the periods of end of forward stroke and end of return stroke of the said rod, the said element being disposed so that it can produce the open condition of the switch in one position and the closed condition in the other position.

3,701,615
TIRE VULCANIZING MACHINE
David John Johnson, Amherst, Nova Scotia, Canada, assignor to M. Holmes Manufacturing & Equipment Ltd., Halifax, Nova Scotia, Canada
Filed Apr. 6, 1971, Ser. No. 131,603
Claims priority, application Canada, May 29, 1970, 84,110
Int. Cl. B29h *5/04*
U.S. Cl. 425—23 **11 Claims**



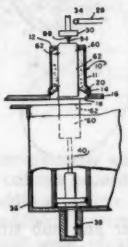
A device for treating pneumatic tires includes a pair of relatively moveable mold sections and a means to open, close and lock the sections in a closed position. A tire-inflating mechanism is also included comprising a flexible tire insert and a pair of relatively moveable plates, the plates and insert definings a sealed chamber, said plates having means to release air trapped between the plates and the tire-inflating means.

3,701,616
BRAKING FORCE REGULATING ASSEMBLY
Shinji Kawai, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Aichi, Japan
Filed July 6, 1970, Ser. No. 52,247
Claims priority, application Japan, July 14, 1969, 44/55,938
Int. Cl. B60t *8/22*
U.S. Cl. 303—22 R **12 Claims**



A braking force regulating assembly for use on the vehicle to vary the hydraulic pressure dependent upon the wheel load, comprising a brake force controlling valve and a member responsive to the wheel load which is arranged to cooperate with the controlling valve in such manner as to increase a responsive load on said wheel load responsive means in dependence upon increases of the wheel load and to decrease said responsive load after said wheel load has attained a predetermined value.

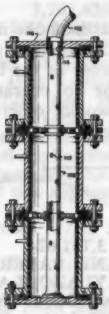
3,701,617
LOCK ASSEMBLY FOR CONNECTING A VIBRATING CORE OF A CONCRETE PIPE MAKING MACHINE
Gerald R. Crawford and Joseph F. Wenther, Sioux City, Iowa, assignors to Concrete Pipe Machinery Company, Sioux City, Iowa
Filed Jan. 12, 1971, Ser. No. 105,877
Int. Cl. B28b *21/28*
U.S. Cl. 425—186 **11 Claims**



A pipe forming apparatus comprising a pipe form and a platform for supporting the pipe form with means for inserting cementitious materials into the interior of the pipe form and a rotating packerhead for distributing the material in the form, and a powered main lift mechanism for raising the packerhead after it has distributed and

formed the pipe, and a non-rotating vibratory core adapted to be inserted through the bottom of the pipe form and means for detachably engaging said core with said rotating packerhead, and an upwardly movable guide system for said vibratory core, with said detachably engaging means including a hydraulic system and an upwardly movable sleeve member adapted to encompass a biased locking collar to maintain said packerhead and core in interengaged relationship until said hydraulic system is moved downwardly.

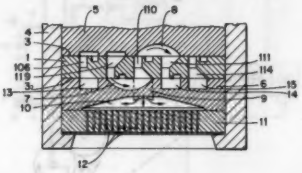
3,701,618
PERISTALTIC EXTRUSION PRESS
Donald G. Wall, Rte. 1, Box 161–C, Indian Head, Md. 20640, and Kenneth N. Temkin, 5805 Fisher Road, Apt. 201, Oxon Hill, Md. 20031
Filed Jan. 27, 1971, Ser. No. 110,225
Int. Cl. B28b *17/00*
U.S. Cl. 425—192 **3 Claims**



An extrusion press which forces plastic material through a die plate by means of one or more peristaltic pumps each having a hydraulically actuated tubular elastomeric diaphragm as the pumping element. The peristaltic pumps are used either singly or in series to feed material directly through a die plate, or are connected in groups of series-connected pumps to feed a plenum chamber containing the die plate. Pump lining sleeves facilitate cleaning and protect the diaphragms against corrosion. Perforated plates positioned between series-connected pumps facilitate straining and mixing of the plastic material.

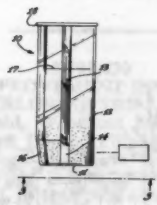
3,701,619
MIXING APPARATUS
Jacques W. J. Appeldoorn and Robert Sluijters, Arnhem, Netherlands, assignors to American Enka Corporation, Enka, N.C.
Filed Oct. 23, 1970, Ser. No. 83,402
Claims priority, application Netherlands, Nov. 14, 1969, 6917131
Int. Cl. B01f *15/02*
U.S. Cl. 425—198 **3 Claims**

An improved mixer with no moving parts is obtained by arranging mixing elements in side-by-side relationship. This apparatus, which is especially suitable for mixing one or more viscous liquids, includes a first body with substantially parallel end faces which contains a plurality of mixing elements with inlets and outlets arranged adjacent to each other in a common plane, the inlets and outlets of the adjacent mixing elements being located in the same face; a second body engaging one end face of the first body and having a passage for receiving one or more viscous liquids and directing the liquid to the inlet of an initial mixing element and channels for connecting the inlets and outlets of adjacent mixing elements in the end face in a pattern; and a third body engaging the other face of the first body and having channels for connecting the inlets and outlets of adjacent mixing elements in the other end face in a pattern, and a passage for discharging the viscous liquids from the exit of a final



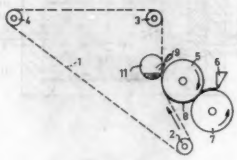
mixing element, the pattern of the channels being such as to guide the viscous liquids sequentially through each of the mixing elements to repeatedly divide and double the liquids whereby intensive mixing is obtained. This mixer is particularly suitable for use in an apparatus for melt spinning synthetic yarn wherein the first, second and third bodies are arranged so that the viscous liquids from the exit of a final element are directed to a spinneret plate.

3,701,620
SAMPLE SCATTERING CELL FOR A PHOTOMETER
Richard M. Berkman, Santa Barbara, and Peter B. Schoefer, Goleta, Calif., assignors to Science Spectrum, Inc., Santa Barbara, Calif.
Filed Oct. 21, 1971, Ser. No. 191,374
Int. Cl. G01n *1/10, 21/00*
U.S. Cl. 356—246 **8 Claims**



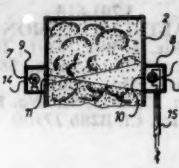
A sample cell holds a liquid or a particle suspension to be illuminated within a photometer. The photometer measures the intensity of the scattered light light at one or more angular positions about a point defined by the intersection of the axis of illumination and acceptance cone of the detector. The detector usually rotates along an arc in a plane about this point thereby defining a scattering plane. To minimize the effect on the measurement of secondary reflections within the cell, the side wall of the sample cell opposite the arc along which the detector rotates includes an oblique portion sloping outwardly toward the top of the sample cell. Because the side wall is oblique, any light reflected by the side wall will be directed up and out of the plane of the acceptance cone in which the scattering measurement is made.

3,701,621
APPARATUS FOR PRODUCING FIBRES OF THERMOPLASTIC MATERIAL
Per Henrik Sixten Berglund, Floda, Peter Robert Fanto-Kurtos, Vastra Frolunda, and Nils Albert Uno Mattson, Goteborg, Sweden, assignors to Continental Linoleum-Union-Betriebs AG, Zurich, Switzerland
Filed Nov. 23, 1970, Ser. No. 91,632
Claims priority, application Sweden, Nov. 24, 1969, 16,124/69
Int. Cl. B29c *17/14*
U.S. Cl. 425—115 **11 Claims**



Thermoplastic fibres are produced by heating a layer of thermoplastic material by passing it between a heated roll and a web or belt. This passage simultaneously shreds the fibres, which are thereafter cooled and collected.

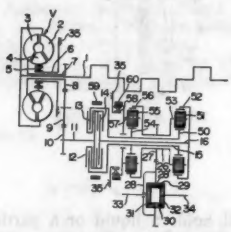
3,701,622
EXCESS SMOKE ELIMINATING SYSTEM FOR BOILERS
Viateur Ducasse, 2041 Wurtele St., Montreal, Quebec, Canada
Filed Nov. 23, 1970, Ser. No. 92,050
Claims priority, application Canada, July 20, 1970, 088,643
Int. Cl. F23n *5/08*
U.S. Cl. 431—76 **10 Claims**



A system to detect excess smoke in the smoke stack of an oil-fired industrial boiler and to automatically reduce the oil supply to the burner of the boiler while allowing said burner to continue to operate, thus eliminating excess smoke which would otherwise be discharged through the smoke stack.

CHEMICAL

3,701,623
AUTOMATIC SPEED CHANGE DEVICE FOR VEHICLES
Yoichi Mori, Nagayuki Marumo, Noburu Fukazawa, and Koichi Ohie, Yokohama, Japan, assignors to Nissan Jidosha Kabushiki Kaisha, Yokohama, Japan
Original application July 18, 1967, Ser. No. 654,231, now Patent No. 3,489,037, dated Jan. 13, 1970. Divided and this application May 2, 1969, Ser. No. 861,541
Claims priority, application Japan, Sept. 27, 1966, 41/63,386
Int. Cl. F16h *37/08, 37/10*
U.S. Cl. 74—695 **5 Claims**



A speed change device for vehicles comprising a torque converter connected to an engine crankshaft, a clutch means, a planetary gear assembly means selectively connectable to said torque converter through said clutch means, a brake and one-way brake means selectively engageable with said planetary gear assembly means, an output gear located at a point corresponding to the longitudinal middle point of said crankshaft, wherein axes of said clutch means, said planetary gear assembly means, said brake and one-way brake means, and said output gear are in alignment with a common axis which is parallel with the axis of said crankshaft.

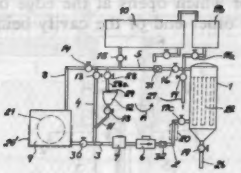
3,701,624
DYEING COTTON AND PAPER WITH BIS(ARYLAZO OR SULFOARYLAZO)-J-ACID UREA REACTION MIXTURE AND COMPOSITION THEREFOR
Richard C. Franklin, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Original application Oct. 3, 1968, Ser. No. 764,966, now Patent No. 3,600,376. Divided and this application Feb. 1, 1971, Ser. No. 111,604
Int. Cl. C09b *35/26;* D06p *1/04;* D21h *1/46*
U.S. Cl. 8—7 **2 Claims**

Direct bis(arylazo- and sulfoarylazo)-J-acid urea dyestuffs, useful for dyeing cellulosic materials, their preparation by a process which comprises coupling an aryl or sulfoaryl diazonium compound to J-acid urea in a neutral to alkaline aqueous medium to which is added a lithium base selected from the hydroxide, bicarbonate and carbonate, and stable, uniform, aqueous, dye pastes of said dyes.

3,701,625
PROCESS FOR THE CHEMICAL TREATMENT OF TEXTILE GOODS
Johannes Helmut Sieber, Aystetten, Germany, assignor to Bowe, Bohler & Weber KG Maschinenfabrik, Augsburg, Germany
Filed Apr. 28, 1969, Ser. No. 819,893
Claims priority, application Austria, Apr. 26, 1968, A 4,085/68
Int. Cl. C09b *67/00;* D06p *1/68;* D06l *1/04*
U.S. Cl. 8—94 **4 Claims**

A process for the chemical treatment of textile goods, e.g. the dyeing, dressing or finishing of textile fibers, yarn, thread or fabric, wherein the chemical-treatment agent is slightly soluble in an organic solvent, especially perchlorethylene and trichloroethylene. The slightly soluble chemical-treatment agent is introduced into a circulating stream of the solvent together with a filter-aid powder which is collected together with particles of the agent upon a porous wall before the liquid reaches the textile goods. As the chemical agent is depleted from the liquid contacting the goods, its recycling through the layer of treatment

agent adsorbed upon the filter powder releases additional treatment agent to the solvent by dissolving therein. Consequently, undissolved particles of the treatment agent cannot accumulate on the fiber of other textile goods to cause blotching or irregular treatment.



3,701,626

PROCESS FOR RENDERING CELLULOSICS WATER- AND OIL-REPELLENT

Samuel E. Ellzey, Jr., 6335 Dwyer Road; and William J. Connick, Jr., 4936 Louisa Drive, both of New Orleans, La. 70126; and Wilson A. Reeves, 715 Marguerite Road; and George L. Drake, Jr., 700 Sadie Ave., both of Metairie, La. 70003

No Drawing. Original application Dec. 9, 1969, Ser. No. 883,624, now Patent No. 3,655,413, dated Apr. 11, 1972. Divided and this application Dec. 23, 1970, Ser. No. 101,131

Int. Cl. D06m *13/28, 13/44, 13/34*

U.S. Cl. 8—115.5 **1 Claim**

The reaction product of tetrakis(hydroxymethyl)phosphonium salts and primary 1,1-dihydroperfluoroalkylamines, when applied from aqueous emulsions, renders cellulosic materials repellent to oil and water and increases their resistance to staining by oily materials.

3,701,627

PROCESS FOR THE CHEMICAL CLEANING OF TEXTILES

Werner Grunewalder, Dusseldorf-Holthausen, Germany, assignor to Henkel & Cie G.m.b.H., Holthausen, Germany

No Drawing. Filed Jan. 27, 1971, Ser. No. 110,345

Claims priority, application Germany, Jan. 30, 1970, P 20 04 232.4

Int. Cl. D06l *1/00*

U.S. Cl. 8—142 **4 Claims**

A process for the chemical cleaning of textiles which comprises treating soiled textiles with a clear water-containing organic solvent mixture consisting essentially of (A) from 20% to 40% by volume of a halogenated hydrocarbon having from 1 to 2 carbon atoms, (B) from 55% to 70% by volume of a monohydric alcohol having from 2 to 5 carbon atoms selected from the group consisting of alkanols and ethylene glycol monoalkyl ethers, and (C) from 5% to 12% by volume of water and recovering cleaned textiles.

3,701,628

TREATMENT OF SURFACE WITH LOW-PRESSURE PLASMAS

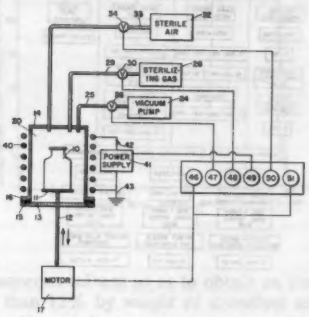
Leland E. Ashman, Belmont, and Wilson P. Menashi, Lexington, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed Feb. 25, 1970, Ser. No. 14,083

Int. Cl. A61l *1/00*

U.S. Cl. 21—54 R **6 Claims**

Method and apparatus for sterilizing surfaces which cannot tolerate intensive heating or which, if heated, must be brought up to temperature and then cooled over an extended period of time. Sterilization is accomplished by exposing the surface to a low-pressure plasma of a sterilizing gas such as chlorine, bromine or iodine.



3,701,629

METHOD FOR THE PREPARATION OF FAUJASITE-TYPE ZEOLITES

Dale D. Maness, Austin, Tex., assignor to Esso Research and Engineering Company

No Drawing. Filed Aug. 4, 1971, Ser. No. 169,069

Int. Cl. C01b *33/28*

U.S. Cl. 423—329 **6 Claims**

Faujasite-type zeolites having high SiO_2/Al_2O_3 ratios are prepared by the acidification of the reaction mixture intermediate an initial holding period and a second holding period. Suitable sources of silica include sodium silicate, silica gel, and silicic acid. Crystalline aluminosilicate zeolites, such as clinoptilolite, may be employed as sources of both silica and alumina. A promoter, such as sodium chloride, is optionally added to the reaction mixture.

3,701,630

PROCESS IMPROVEMENT IN SYNTHESIS OF OXYCHLORINE TRIFLUORIDE

Charles B. Lindahl, Woodland Hills, Carl J. Schack, Chatsworth, and Donald Pilipovich, Agoura, Calif., assignors to North American Rockwell Corporation

No Drawing. Filed Feb. 9, 1970, Ser. No. 14,820

Int. Cl. C01b *7/24, 11/02, 11/24*

U.S. Cl. 23—203 **10 Claims**

In a process for preparing oxychlorine trifluoride by the reaction of chlorine nitrate and fluorine, the improvement wherein the reaction is initiated in the presence of a covalent fluoride which is capable of oxidizing chlorine nitrate. Oxychlorine trifluoride is useful as an oxidizer.

3,701,631

NONDESTRUCTIVE SPOT TEST METHOD FOR TITANIUM AND TITANIUM ALLOYS

Maywood L. Wilson, Tabb, Va., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

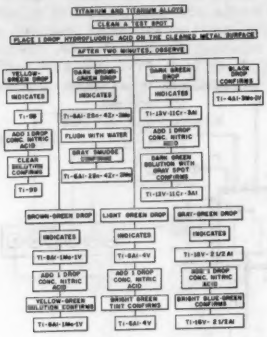
Filed Apr. 21, 1971, Ser. No. 136,085

Int. Cl. G01n *33/20*

U.S. Cl. 23—230 R **18 Claims**

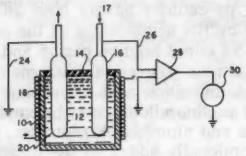
A method for spot test identification of titanium and various titanium alloys commonly used in aerospace

applications. The spot test identification involves color codes obtained when a drop of concentrated hydrofluoric



acid and a drop of concentrated nitric acid are placed on the surface to be tested.

3,701,632
VAPOR PHASE DETECTORS
James E. Lovelock, Bowerchalke, near Salisbury, England, assignor to California Institute of Technology, Pasadena, Calif.
Filed June 1, 1970, Ser. No. 41,905
Claims priority, application Great Britain, Mar. 5, 1970, 12,003/70
Int. Cl. G01n *27/04, 7/10*
U.S. Cl. 23—232 E **9 Claims**



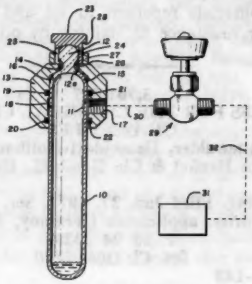
The change in potential difference, resistance or current flow between electrodes in an electrolytic cell is utilized to detect pressure change, absolute hydrogen pressure and pressure of other gases present in hydrogen carrier gas, particularly those which are reactive with the electrodes. At least one of the electrodes is formed of a material selectively permeable to hydrogen, preferably comprising palladium. The cell may be simultaneously utilized for separation and regeneration of hydrogen carrier gas and may be conveniently integrated and combined with a gas chromatographic column on a small size chip containing recesses for the cell and column components formed by conventional etching-masking techniques.

3,701,633
DISPOSABLE COLORIMETRIC pH INDICATOR AND SAMPLING DEVICE FOR SWIMMING POOL WATER AND THE LIKE
Ward B. Davis, Glendale, Calif., assignor to Sterilizer Control Royalties, North Hollywood, Calif.
Continuation-in-part of application Ser. No. 800,887, Feb. 20, 1969, now Patent No. 3,620,676. This application Feb. 10, 1971, Ser. No. 114,188
Int. Cl. G01n *31/22, 33/18*
U.S. Cl. 23—253 TP **6 Claims**

A disposable pH colorimetric indicator and sampling device particularly for swimming pool water is formed by embossing a synthetic plastic sheet with a syringe-like cavity and closing the cavity by adhering a plane synthetic plastic sheet over the cavity, the two sheets being either heat-sealed or adhesively joined together on the margins around the cavity, the cavity having a tubular portion one end of which opens at the edge of the adhered sheets, and the other end of the cavity being enlarged to

form a finger-compressible enlargement. An interior coating of a pH colorimetric indicator composition reactive with the water to be tested is provided, the liquid being drawn into the tubular cavity by first compressing the enlargement, and releasing the pressure to draw in a water sample to dissolve and react with the indicator coating. The preferred indicator composition comprises a sodium salt of phenol red, an antichlor reagent and a binder.

3,701,634
REACTION VESSEL ASSEMBLY
Raymond D. Worden, Houston, Tex., assignor to Ruska Instrument Corporation, Houston, Tex.
Filed May 10, 1971, Ser. No. 141,599
Int. Cl. B01l *3/14*
U.S. Cl. 23—259 **1 Claim**

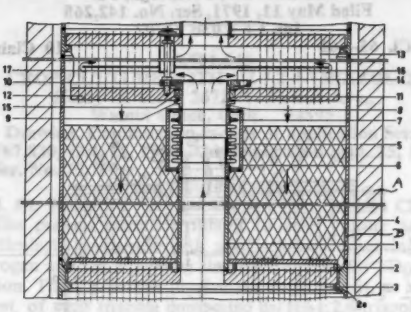


A reaction vessel assembly including a reaction vessel and cap for readily viewing the reaction of two or more compounds in which pressure developed within the vessel does not tend to separate the vessel and cap thus permitting them to be held together by a simple latch mechanism with provisions for one or more compounds to be added after the cap has been secured to the reaction vessel.

3,701,635
PIPE CONNECTOR FOR THE INTERIOR OF REACTION VESSELS
Herbert Staarmann and Hans-Gunter Brieke, Dortmund, and Dirk Gerdes, Kamen, Germany, assignors to Friedrich Uhde G.m.b.H., Dortmund, Germany
Filed Nov. 3, 1970, Ser. No. 86,524
Claims priority, application Germany, Nov. 18, 1969, P 19 57 826.8
Int. Cl. B01j *9/04*
U.S. Cl. 23—289 **4 Claims**

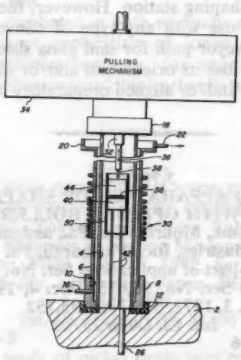
In a reaction vessel, for example an ammonia synthesis converter, a detachable pipe connector for the re-

action sections that are filled with catalyst, and a number of intermediate heat exchangers, and which ensures



at all times, despite thermal expansion, the necessary gastightness, but at the same time affords accessibility to the catalyst beds.

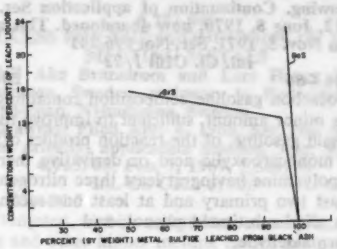
3,701,636
CRYSTAL GROWING APPARATUS
Harold E. La Belle, Jr., Quincy, and William T. Little, Millis, Mass., assignors to Tyco Laboratories, Inc.
Filed Sept. 23, 1970, Ser. No. 74,306
Int. Cl. B01j *17/18*
U.S. Cl. 23—301 SP **12 Claims**



Apparatus for use in growing large size monocrystalline plates of materials such as alumina. The apparatus consists of a forming member for which the plate is grown and heat susceptor means shaped so as to provide a temperature pattern symmetrical with the edge configuration of the plate.

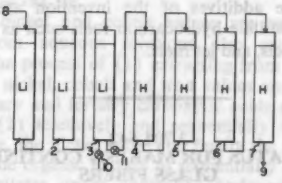
3,701,637
PROCESS FOR LEACHING STRONTIUM SULFIDE BLACK ASH
Jose L. Arnaud, Modesto, Calif., assignor to FMC Corporation, New York, N.Y.
Filed June 30, 1970, Ser. No. 51,113
Int. Cl. C01f *11/04, 11/10;* B01d *11/02*
U.S. Cl. 23—312 R **3 Claims**

An improved process is described for leaching strontium sulfide black ash with an aqueous solvent in which at least 90% of the strontium sulfide values are extracted by an aqueous solvent, in a plurality of leaching stages, by treating the black ash in at least one leaching stage



with an aqueous solvent so as to obtain an extract having no more than 12% by weight of strontium sulfide.

3,701,638
LITHIUM ISOTOPE SEPARATION
Zenji Hagiwara, Sendai-shi, Japan, assignor to Nippon Rensui Kabushiki Kaisha (also known as Japan Water Treatment Services Company), Tokyo-to, Japan
Filed Sept. 26, 1968, Ser. No. 762,766
Claims priority, application Japan, Oct. 2, 1967, 42/63,207
Int. Cl. B01d *11/04;* C01d *1/32*
U.S. Cl. 23—312 **2 Claims**



A solution containing lithium isotope ions is treated with at least one cation exchanger to cause adsorption of the lithium ions on the cation exchanger, which is then treated with an eluent in the form of a solution of a water-soluble compound of a metal other than lithium in a water or a polar solvent to cause elution of the lithium ions.

3,701,639
SOFT-SOLDERABLE MOLYBDENUM AND TUNGSTEN SURFACES CONTAINING DIFFUSED TIN
Newell C. Cook, Schenectady, N.Y., assignor to General Electric Company
No Drawing. Original application June 23, 1969, Ser. No. 835,737, now Patent No. 3,567,598, dated Mar. 2, 1971. Divided and this application Aug. 21, 1970, Ser. No. 66,070
Int. Cl. B32b *15/00, 15/04*
U.S. Cl. 29—195 **4 Claims**

Molybdenum and tungsten can be tinided in a fused salt bath. The surfaces so produced are readily wet by molten soft solder and, therefore, such surfaces can be readily soft-soldered by conventional soft-soldering techniques to themselves or to other objects which can be soft-soldered.

3,701,640

COMPOSITION

Charles A. Lease, Chicago, Seymour H. Patinkin, Skokie, and Frank J. Chloupek, South Holland, Ill., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Continuation of application Ser. No. 44,612, June 8, 1970, now abandoned. This application Nov. 5, 1971, Ser. No. 196,241

Int. Cl. C10l *1/22*

U.S. Cl. 44—66 20 Claims

A hydrocarbon gasoline composition containing, as an additive, a minor amount, sufficient to improve the detergency of said gasoline, of the reaction product of:

(A) a monocarboxylic acid or derivative thereof;

(B) a polyamine having at least three nitrogen atoms, at least two primary and at least one secondary;

(C) an alkyl-substituted phenol; and

(D) formaldehyde;

A preferred reaction product contains 4,7,10-tris(2-hydroxy-5-alkyl) benzyltetraethylenepentamine-1,13 palmitic acid diamide.

3,701,641

STABILIZED DISTILLATE HYDROCARBON FUEL OIL COMPOSITIONS AND ADDITIVES THEREFOR

Marvin S. Rakow and Robert J. Konig, East Brunswick, N.J., assignors to Cities Service Oil Company, Tulsa, Okla.

No Drawing. Filed Aug. 29, 1969, Ser. No. 854,266

Int. Cl. C10l *1/22*

U.S. Cl. 44—73 6 Claims

A stabilized distillate hydrocarbon fuel oil composition comprising a major proportion of a distillate hydrocarbon fuel and a minor proportion of a stabilizing additive comprised of (a) a polyamine having 2 to about 6 amino groups and containing about 24 to 50 carbons, (b) N,N'-disalicylidine-1,2-propylenediamine, and (c) a cyclohexylamine. The additives of the invention are useful in stabilizing distillate hydrocarbon fuels such as No. 2 fuel oils, diesel fuels, and jet fuels.

3,701,642

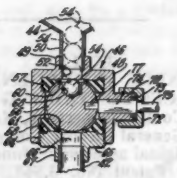
APPARATUS FOR MAKING CONTINUOUS GLASS FIBERS

Ralph M. Stream, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation

Continuation of abandoned application Ser. No. 799,848, Feb. 17, 1969. This application May 21, 1971, Ser. No. 145,963

Int. Cl. C03b *37/02*

U.S. Cl. 65—11 W 8 Claims



This invention pertains to a pressurized glass fiber stream feeder having a rotary supply means for supplying glass marbles to a melting compartment of the feeder. The rotary supply means has yieldable members within the housing to prevent escape of pressurized air from the feeder.

3,701,643

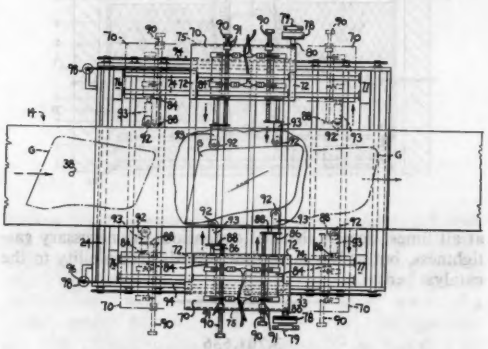
MOVING GLASS LOCATING DEVICES

Robert G. Frank, Tarentum, Pa., assignor to PPG Industries Inc., Pittsburgh, Pa.

Filed May 11, 1971, Ser. No. 142,268

Int. Cl. C03b *23/02*

U.S. Cl. 65—62 10 Claims



Apparatus for aligning and orienting moving glass sheets immediately prior to their treatment. This invention is especially suitable for use with glass sheets heated while conveyed through a furnace on a roller conveyor where the glass becomes misaligned or misoriented prior to entry into a shaping station. However, the invention is also capable of use with any type of conveyor defining an enclosed conveyor path for said glass sheets where the glass is liable to lose its orientation and/or alignment and must be oriented and/or aligned preparatory to processing.

3,701,644

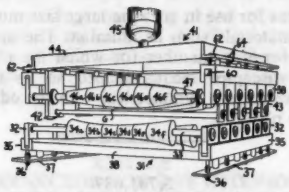
METHOD AND APPARATUS FOR SHAPING GLASS SHEETS WITH OPPOSED ROLLER SETS

Robert G. Frank, Monroeville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of applications Ser. No. 18,242, Mar. 10, 1970, and Ser. No. 95,015, Dec. 4, 1970. This application Nov. 3, 1971, Ser. No. 195,152

Int. Cl. C03b *23/02*

U.S. Cl. 65—106 36 Claims



Shaping a succession of continuously moving discrete, heat-softened glass sheets by momentarily engaging the opposite surfaces of each sheet in succession at longitudinally spaced longitudinal increments between opposed rolls of complementary shape as each sheet moves continuously through a press bending station and disengaging the sheets after momentary pressurized engagement after

the sheet has been shaped but before any longitudinally spaced increment is subjected to pressurized engagement between more than two pairs of adjacent rolls.

3,701,645
CROP CULTURE WITH 1H-1,2,4-TRIAZOLES
Henry H. Scott, 2672 W. Newell Ave., Walnut Creek, Calif. 94595
No Drawing. Continuation-in-part of application Ser. No. 767,830, Oct. 15, 1968. This application Sept. 25, 1970, Ser. No. 75,770
Int. Cl. C05g *3/08*
U.S. Cl. 71—1 14 Claims

The present invention relates to crop culture and is particularly concerned with practices for conserving soil nitrogen and for supplying the requirements for plant nutrition. These practices involve the employment, as active agent, of such triazole compound as 1H-1,2,4-triazole, as well as other triazole compounds, which are substituted in the 1-position by alkylcarboxylate, alkylthiocarboxylate, carboxamide or thiocarboxamide groups. Useful compositions employing such compounds are also disclosed. Typical compositions comprise a reduced nitrogen fertilizer and a triazole compound.

3,701,646
COMBATING WEEDS WITH LOWER ALKYL 3-PHENYLCARBAMOYLOXYTHIOLCARBANILATES
Ralph P. Neighbors, Olathe, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Aug. 13, 1969, Ser. No. 849,857
Int. Cl. A01n *9/12*
U.S. Cl. 71—100 1 Claim

Weeds are combated in both soybeans and small grains by post-emergent application of lower alkyl 3-phenylcarbamoyloxythiolcarbanilates, for example, S-ethyl 3-(N′-m-tolylcarbamoyloxy)thiolcarbanilate.

3,701,647
PROCESS FOR OBTAINING NICKEL CONCENTRATES FROM NICKEL OXIDE ORES
Hiroshi Yasui, Tokyo, and Mitsuo Takahashi, Toda, Japan, assignors to Nippon Mining Co., Ltd.
No Drawing. Filed Feb. 13, 1970, Ser. No. 11,303
Claims priority, application Japan, Feb. 17, 1969, 44/11,020
Int. Cl. C22b *1/08, 23/06*
U.S. Cl. 75—3 10 Claims

The nickel grade of nickel oxide ores containing silicic acid and magnesia is improved by process of pulverizing the ore, and then calcining and roasting the pulverized ore at a temperature above 750° C. so that the mineral structure of the ore is transformed into the forsterite or enstatite form. The thus treated ore is then subjected to a segregation reaction whereby the nickel is separated in the form of ferronickel particles, and then the ore is concentrated by magnetic or flotation separation in the usual manner, whereby a high grade nickel concentrate is obtained.

3,701,648
RECOVERY OF COPPER FROM COPPER ORE
Carl T. Ashby, James W. Berry, and Archie J. Deutschman, Jr., Tucson, Ariz., assignors to Owens-Illinois, Inc.
No Drawing. Filed Dec. 11, 1970, Ser. No. 97,340
Int. Cl. C22b *15/14*
U.S. Cl. 75—72 11 Claims

Copper metal is advantageously obtained from copper sulfide ores, without the production of air-polluting SO_2, by contacting the ore either simultaneously or step-wise with hydrogen and water vapor at a temperature from about 700° C., preferably above about 750° C., to above the melting point of the ore.

3,701,649
PROCESS FOR THE PRODUCTION OF HIGH MELTING METALS
Elis Kjell Ake Svanstrom and Lars Henry Ramqvist, Nynashamn, Sweden, assignors to Rederiaktiebolaget Nordstjernan, Nynashamn, Sweden
No Drawing. Filed Apr. 4, 1969, Ser. No. 813,746
Claims priority, application Sweden, Apr. 9, 1968, 4,765/68; Feb. 7, 1969, 1,661/69
Int. Cl. C22b *57/00*
U.S. Cl. 75—84.5 6 Claims

Pure tungsten, niobium, tantalum, zirconium, hafnium, uranium and other higher melting metals are prepared by reduction of an ore thereof to produce an alloy having the metal in solid solution. This alloy has a melting point being substantially lower than that of the pure metal. This alloy is crushed and the contained metals are transformed to halides with a halogen. The halides are separated thereafter and the major part reduced to metal. Alternatively tungsten is produced by treating the alloy obtained with a suitable agent dissolving the alloying agents. This tungsten is particularly suitable for producing tungsten carbonyl.

3,701,650
COPPER, NICKEL, COBALT AND IRON SEPARATION PROCESS
Abraham J. van der Zeeuw, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.
No Drawing. Filed June 29, 1970, Ser. No. 50,920
Claims priority, application Great Britain, June 30, 1969, 32,905/69
Int. Cl. C22b *15/12, 23/04*
U.S. Cl. 75—101 BE 4 Claims

Copper, nickel and cobalt values are selectively recovered from aqueous solutions also contining iron values by the process of (1) extracting from the solution the copper, nickel, cobalt and iron values employing certain secondary and tertiary carboxylic acids as extraction agent and (2) selectively and sequentially reducing the copper value, the nickel value and finally the cobalt value present in the organic extract to sequentially isolable metallic precipitates under controlled hydrogen reduction conditions.

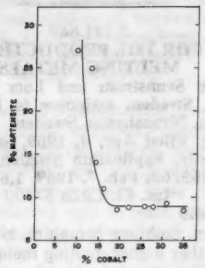
3,701,651
PROCESS FOR PRODUCTION OF MERCURY
Albert G. W. Hack, Denver, and John B. Hamilton, Boulder, Colo., assignors to Al Hack & Associates, Inc., Denver, Colo.
Continuation-in-part of application Ser. No. 707,707, Feb. 23, 1968. This application Feb. 6, 1970, Ser. No. 9,214
Int. Cl. C22b *43/00*
U.S. Cl. 75—101 R 4 Claims

Metallic mercury is produced by leaching mercury ore with an aqueous alkaline sulfide solution while simultaneously precipitating the mercury by the addition of a metallic precipitant, such as aluminum metal, directly to the leaching tanks, or by electrodeposition directly from the leaching tanks.

3,701,652
VALVE SEAT INSERTS
Delmar O. Stanley, Mentor, Ohio, assignor to TRW Inc., Cleveland, Ohio
Filed Jan. 19, 1971, Ser. No. 107,667
Int. Cl. C22c *39/08*
U.S. Cl. 75—126 A 5 Claims

A valve seat insert having improved mechanical properties and being substantially nickel free, the insert hav-

ing a composition containing from 1.00 to 2.25% carbon, a maximum of 0.75% manganese, a maximum of



1.00% silicon, from 28 to 32% chromium, from 18 to 30% cobalt, from 2 to 8% tungsten, with the balance substantially iron except for incidental impurities.

3,701,653
STAINLESS STEEL

James L. Schanck, Beaver Falls, Pa., assignor to The Babcock & Wilcox Company, New York, N.Y.

No Drawing. Filed Dec. 3, 1970, Ser. No. 94,999
Int. Cl. C22c *39/20*
U.S. Cl. 75—124 4 Claims

An age hardenable stainless steel having a wholly austenitic structure at hot working temperatures for efficiency of processing and a wholly martenitic structure at the temperature of fabrication and use for effectiveness of product.

3,701,654
SILVER-BASE ALLOY FOR MAKING ELECTRICAL CONTACTS

Teuvo J. Santala, Attleboro, and Hans G. Hirsbrunner, South Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 3, 1967, Ser. No. 607,034
Int. Cl. C22c *5/00, 31/04*
U.S. Cl. 75—173 2 Claims

Improved alloys of cadmium oxide and silver are produced by incorporating therein between 0.001% and 5.0% by weight of sodium, beryllium or palladium as an additive. Electrical contacts formed from such alloys exhibit less arc-erosion and contact-sticking with lower contact-resistance than do electrical contacts formed from cadmium oxide-silver alloys having cobalt incorporated therein as an additive.

3,701,655
COLUMBIUM BASE ALLOY

John J. Rausch, Antioch, and Ray J. Van Thyne, Oak Lawn, Ill., assignors to Surface Technology Corporation, Stone Park, Ill.

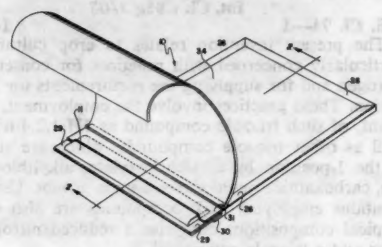
Continuation-in-part of application Ser. No. 755,658, Aug. 27, 1968, which is a continuation-in-part of application Ser. No. 665,510, Sept. 5, 1967. This application Dec. 18, 1970, Ser. No. 99,523
Int. Cl. C23c *11/14, 27/00*
U.S. Cl. 75—174 1 Claim

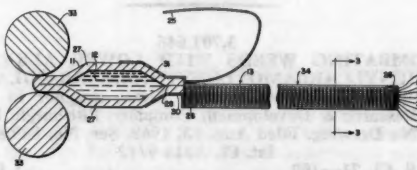
An alloy useful in making nitrided wear resistant materials consisting essentially of 20% tungsten, 30% titanium, balance columbium.

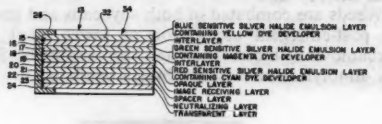
3,701,656
PHOTOGRAPHIC PRODUCTS AND PROCESSES FOR COLOR DIFFUSION TRANSFER

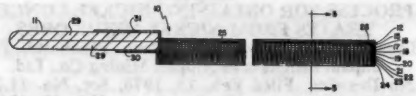
Howard G. Rogers, Weston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

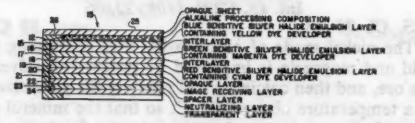
Continuation of application Ser. No. 39,666, May 22, 1970, which is a continuation-in-part of abandoned application Ser. No. 815,585, Apr. 14, 1969, which in turn is a continuation-in-part of abandoned application Ser. No. 728,535, May 13, 1968. This application July 2, 1971, Ser. No. 159,207
Int. Cl. G03c *1/48, 5/54, 7/00*
U.S. Cl. 96—3 28 Claims

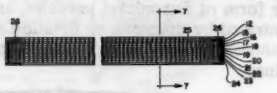


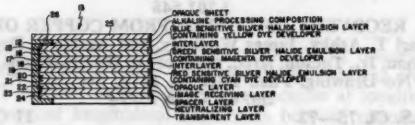












The present invention relates to a composite photographic diffusion transfer color process film unit which

comprises a photosensitive laminate including a dimensionally stable transparent support carrying a dyeable polymeric layer, a processing composition permeable opaque layer, and a photosensitive silver halide layer having associated therewith a dye transfer image-forming material; a dimensionally stable sheet adapted to be superposed substantially coextensive the surface of the laminate opposite the transparent support, and a processing composition adapted to be spread on the surface of the laminate opposite the transparent support and between the laminate and superposed sheet; and means for reducing the pH of said processing composition from a first pH at which said dye image-forming material is soluble and diffusible to a second pH at which said material is substantially non-diffusible; and to specified color diffusion transfer processes employing such film unit.

3,701,657

PROCESSING OF PRESENSITIZED PHOTOLITHOGRAPHIC PRINTING PLATES

Brian Joseph Moore and Leonard James Watkinson, Yorkshire, England, assignors to W. H. Howson Limited, Yorkshire, England

No Drawing. Filed May 8, 1968, Ser. No. 727,656
Claims priority, application Great Britain, May 18, 1967, 23,249/67
Int. Cl. G03c *5/00*
U.S. Cl. 96—35 **5 Claims**

This disclosure relates to developer solutions suitable for developing exposed presensitized photolithographic printing plates, which solutions comprise a solvent for the areas of presensitized layer to be removed from the printing plate and a surface active agent, the volumetric ratio of solvent to surface active agent being considerably higher than conventionally used, whereby the efficacy of the developer solution is considerably enhanced.

3,701,658

PROCESS FOR APPLYING PHOSPHOR PARTICLES TO A DIELECTRIC LAYER OF A GASEOUS DISCHARGE DEVICE

Robert N. Clark, Mason, Mich., assignor to Owens-Illinois Inc.

No Drawing. Filed Dec. 24, 1970, Ser. No. 101,433
Int. Cl. G03c *5/00*
U.S. Cl. 96—36.1 **20 Claims**

There is disclosed a process for embedding phosphor particles in the surface of at least one dielectric member to be assembled in a multiple gaseous discharge display/memory panel such that the phosphor particles are partially exposed to the gaseous medium of the assembled panel and are capable of being excited by radiation from the gaseous discharges of such assembled panel. Any suitable luminescent phosphor which is compatible with the dielectric may be used; however, photoluminescent phosphors are highly preferred. One embodiment comprises partially embedding the phosphor particles by means of a photosensitive material.

3,701,659

PHOTOLITHOGRAPHIC MASKS OF SEMICONDUCTOR MATERIAL

Ven Y. Doo, Poughkeepsie, Joseph Regh, Wappingers Falls, and David K. Seto, Lagrangeville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 1, 1970, Ser. No. 42,344
Int. Cl. G03c *5/00*
U.S. Cl. 96—38.3 **3 Claims**

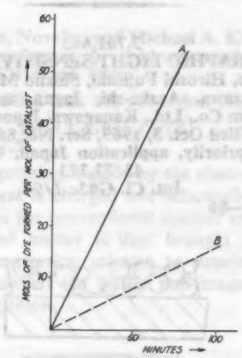
A photolithographic mask comprising a substrate of quartz or glass and a pattern-defining layer of a semiconductor material such as silicon. The pattern is defined in the semiconductor material by etching of the semiconductor, involving displacement of the semiconductor in selected areas with a metal such as copper. In this way, a high resolution mask is obtainable having the added feature of being partially transparent.

3,701,660

PHOTOSENSITIVE ELEMENT CONTAINING PHOTOLABILE COBALT OR IRON COMPLEX AND THE USE THEREOF IN COLOR DEVELOPMENT

John Macdonald Pratt, Whitegate, and Brian Ronald David Whitear, Ilford, England, assignors to Imperial Chemical Industries Limited, London, and Ilford Limited, Ilford, England

Filed Oct. 21, 1970, Ser. No. 82,724
Int. Cl. G03c *5/24*; G03 *1/48*
U.S. Cl. 96—48 R **4 Claims**



This application describes a process for the production of a photographic image which comprises subjecting to light exposure a layer comprising a photolabile cobalt or iron complex of a specified formula and treating the exposed layer with compounds which, when one of them is oxidised, will react to form a coloured or black compound.

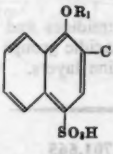
3,701,661

COLOR DEVELOPING WITH A 4-SULFO NAPHTHAMIDE BASE

Boris Peter Brand, Bramhall, England, assignor to Ilford Limited, Ilford, Essex, England

No Drawing. Filed Nov. 25, 1970, Ser. No. 92,927
Claims priority, application Great Britain, Nov. 26, 1969, 57,799/69
Int. Cl. G03c *7/00*
U.S. Cl. 96—55 **7 Claims**

This application describes a compound of the formula:



wherein R_1 is selected from an alkyl, aralkyl, alkaryl, acyl and a substituted acyl group and R_2 and R_3 are each selected from a hydrogen atom and an alkyl, aralkyl, alkaryl, aryl and a substituted aryl group.

Compounds of this formula are of use in colour photography. When the compounds are present during the colour development of silver halide photographic material they cause an increase in density of the resultant dye image.

3,701,662

COLOR PHOTOGRAPHIC PROCESS USING A BLEACH-FIX SOLUTION CONTAINING A METAL COMPLEX OF A SELENIUM COMPOUND

Enzo Piccotti, Ilford, England, assignor to Ilford Limited, Ilford, Essex, England

No Drawing. Filed Jan. 12, 1971, Ser. No. 105,956
Claims priority, application Great Britain, Jan. 13, 1970, 1,617/70
Int. Cl. G03c *7/00*
U.S. Cl. 96—55 9 Claims

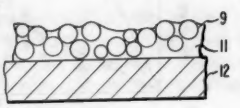
This application describes a colour development process for colour silver halide photographic material, wherein the material after development is treated with a bleach-fix solution which contains a mild oxidising agent, a silver halide solvent and as a bleach-fix accelerator a water-soluble complex consisting of a specified metal and selenourea, a specified N-alkyl substituted selenourea or a specified selenosemicarbazide.

3,701,663

PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Asaji Kondo, Hiroshi Fujisaki, Shizuo Miyano, and Kenichiro Yazawa, Asaka-shi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 3, 1969, Ser. No. 863,645
Claims priority, application Japan, Oct. 4, 1968, 43/72,273
Int. Cl. G03c *1/94*
U.S. Cl. 96—86 16 Claims



This invention relates to a photographic light-sensitive material comprising a highly reflective support with a lustrous surface coated with at least one layer of microcapsules containing a silver halide emulsion.

3,701,664

PROCESS FOR HARDENING LIGHT-SENSITIVE PHOTOGRAPHIC LAYERS CONTAINING GELATINE

Bernhard Piller, Marly-le-Petit, and Karl Seitz, Oberwil, Basel-Land, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation of abandoned application Ser. No. 796,570, Feb. 4, 1969. This application May 25, 1971, Ser. No. 146,853
Claims priority, application Switzerland, Feb. 9, 1968, 1,927/68
Int. Cl. G03c *1/30*
U.S. Cl. 96—111 12 Claims

Colorless halogeno pyrimidines and halogeno-1,3,5-triazines containing no free acidic groups are used for hardening light sensitive gelatine layers.

3,701,665

REDUCTION OF SULFUR EXTRACTION FROM POLY(ARYLENE SULFIDE) COATED COOKWARE

Monford D. Grimes and James T. Edmonds, Jr., Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Dec. 10, 1970, Ser. No. 97,017
Int. Cl. A47j *36/04*
U.S. Cl. 99—1 5 Claims

Cookware which is to come in contact with food substances which can extract organic sulfur is coated with a composition comprising poly(arylene sulfide) and 3–30 parts of a fluorocarbon polymer per 100 parts of said poly(arylene sulfide). The resulting coating is highly resistant to extraction of organic sulfur.

3,701,666

PROCESS FOR MAKING AMINO ACID COMPOSITION

Milton Winitz, Palo Alto, Calif., assignor to Morton-Norwich Products, Inc., Chicago, Ill.

No Drawing. Filed Feb. 14, 1968, Ser. No. 705,287
Int. Cl. A23l *1/00*
U.S. Cl. 99—1 29 Claims

A process for making palatable compositions containing all of the essential amino acids necessary for human nutrition. Particular processes are described for making compositions containing combinations of amino acids, carbohydrates and minerals which are palatable to human taste. Processes are also shown for making palatable chemically defined diets for human consumption containing the above plus vitamins and fat as an aqueous emulsion or in dry form.

3,701,667

METHOD FOR PUFFING GELATINIZED RICE GRAINS

Takao Heki, Katsuharu Yasumatsu, and Koshichi Sawada, Osaka-fu, and Yoshiro Funakoshi, Kyoto-fu, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka-shi, Japan

Filed Oct. 1, 1969, Ser. No. 862,672
Int. Cl. A23l *1/18*
U.S. Cl. 99—81 6 Claims

A method for puffing gelatinized rice grains is characterized by subjecting gelatinized rice grains to a hot air stream which slows down as it moves upward in a tower to puff the rice grains. An apparatus for the method is characterized by the provision of a tower whose inner diameter increases gradually toward its upper portion, the inclination angle of its generating line with respect to the axis thereof being in the range of 2.5 to 30 degrees.

3,701,668

COMPOSITION FOR IMPROVING BREAD MAKING AND TEXTURE

Lewis D. Morse, 133 Snowden Lane, Princeton, N.J. 08540, and Paul A. Hammes, 1886 Lamberts Mill Road, Westfield, N.J. 07090

No Drawing. Filed June 9, 1970, Ser. No. 44,881
Int. Cl. A21d *2/06, 2/10*
U.S. Cl. 99—91 1 Claim

A composition for addition to bread dough to improve the texture of the bread produced therefrom is an aqueous solution of ascorbic acid or its equivalent which is solubilized in a hydrocarbon by the solubilizing action of micelles formed by a surfactant.

3,701,669

EDIBLE FOAM-PRODUCT

Wilhelm Elbertus van der Hoven, The Hague, Netherlands, assignor to Lenderink & Co. N.V., Schiedam, Netherlands

Filed May 20, 1969, Ser. No. 826,210
Claims priority, application Great Britain, May 23, 1968, 24,733/68
Int. Cl. A23g *3/00*
U.S. Cl. 99—139 6 Claims

An edible foam product is prepared by preparing a mixture containing foamable protein, liquid fatty material,

and an edible binder on the basis of guar and/or carregenate of potassium and/or sodium and/or calcium carregenate, and foaming the mixture thus obtained.

3,701,670

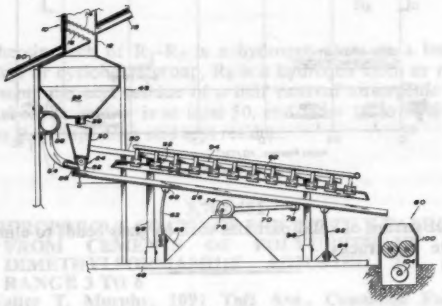
INFRARED MICRONIZING COOKER

Chardo W. Pierce, Lubbock, Tex., assignor to Chardo Pierce Micronizing Company, Amarillo, Tex.

Continuation-in-part of application Ser. No. 854,693, Sept. 2, 1969, which is a continuation-in-part of application Ser. No. 576,353, Aug. 31, 1966. This application May 6, 1971, Ser. No. 140,834

Int. Cl. A23k; A23l *1/18*

U.S. Cl. 99—235 A 3 Claims



Grain is thoroughly cleaned and fed at a predetermined regulated rate on the high end of a tilted metal vibrating plate. As the grain moves down the plate, it is heated at a very fast rate by infrared radiation. The cooked grain is dropped from the low end of the plate into a rolling mill where the soft grain is rolled into flakes.

3,701,671

MASONRY MATERIALS AND METHOD OF MAKING THE SAME

Helmer L. Blengsli, Old Greenwich, Conn., assignor to Tekology Corporation, Palisades Park, N.J.

No Drawing. Filed July 1, 1970, Ser. No. 51,675

Int. Cl. C04b *31/14*

U.S. Cl. 106—98 5 Claims

A unique mineral found in the subsoil of the Bahama Islands was found to yield high quality masonry products in form of bricks, blocks and tiles when crushed to particle sizes ranging from 8 mesh to dust and reacted with a hydraulic cement and water and molded under pressure of at least 500 p.s.i.

To reduce moisture absorption tendency of the masonry products made from the Bahama minerals, these may in part be substituted with silicon sand or Bahamian dredged sea sand. To increase the green strength of the products, the water of hydration may contain upward of 5 percent of a mineral chloride.

3,701,672

BITUMINOUS FIBROUS BUILDING PRODUCT AND METHOD OF PREPARING SAME

David L. Ruff and Nadeem U. Siddiqui, Torrance, Calif., assignors to Grefco, Inc., Philadelphia, Pa.

No Drawing. Filed Mar. 27, 1970, Ser. No. 23,462

Int. Cl. C08h *13/00, 17/02, 17/66*

U.S. Cl. 106—282 7 Claims

A building product is disclosed comprising expanded perlite and a specifically prepared corrugated boxboard based fiber. The building product exhibits superior properties in the strength and abrasion resistance categories among others.

3,701,673

SIMULTANEOUS CONVERSION AND FUSION OF ELECTROSTATICALLY PRODUCER PRINTING MASTERS

Martin W. Hellar, Novelty, and Michael A. Kiener, Cleveland, Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

No Drawing. Filed Jan. 20, 1971, Ser. No. 108,214

Int. Cl. G03g *13/06*

U.S. Cl. 117—17.5 2 Claims

To provide a printing master, by the electrostatic process, a master sheet is charged and selectively discharged and then toned in the conventional manner to produce an image. The toned master is then brought into contact with a heated conversion solution to simultaneously fix the image and convert the master non-image areas from a hydrophilic condition.

3,701,674

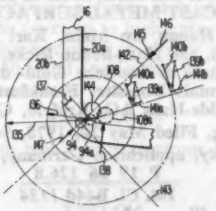
APPARATUS AND METHOD FOR APPLYING A BEAD OF SEALING MATERIAL TO A SEALING SURFACE OF A CATHODE-RAY TUBE

Laurence B. Kimbrough, Lititz, Pa., assignor to RCA Corporation

Filed Aug. 12, 1970, Ser. No. 63,134

Int. Cl. B05c *7/00;* B44d *5/00;* C03c *17/00*

U.S. Cl. 117—43 3 Claims



An apparatus including a rotatable support for holding a cathode-ray tube component, for example, a funnel comprising a sealing surface having a closed configuration including radiused corners, an inner border, and an outer border, a means for rotating the support, a sealing-material container having a bottom outlet, a means for tracking the sealing surface with the container along a first path

on the sides of the sealing surface, and a means for tracking the sealing surface with the container along a second path displaced towards the outer border on the corners of the sealing surface. Method includes positioning sealing surface of the cathode-ray tube; for example, a funnel-sealing surface in a horizontal plane, movably positioning a container having a bottom outlet over the sealing surface, rotating the sealing surface about the center of the closed configuration, tracking said rotating sealing surface with the outlet along the first path, approaching the beginning of the corners of the sealing surface gradually moving the outlet from the first path to the second path, tracking the rotating sealing surface with the outlet on each of the corners at the second path, approaching the ending of each of the sealing surface corners gradually moving said outlet from the second path to the first path, and during rotation dispensing a bead of sealing material at a uniform rate on the sealing surface.

3,701,675

PROCESS FOR THE NONELECTROLYTIC TIME METALLIZING OF NONCONDUCTORS

Gottfried Kallrath, Bruhl-Vochem, Helmut Knorre, Hainstadt (Main), Eugen Meyer-Simon, Frankfurt am Main, and Hanns Biegler, Wesseling, Bezirk Cologne, Germany

No Drawing. Application Feb. 4, 1970, Ser. No. 12,888, now Patent No. 3,672,937, which is a continuation of abandoned application Ser. No. 593,736, Nov. 14, 1966. Divided and this application June 24, 1971, Ser. No. 156,569

Claims priority, application Germany, Nov. 12, 1965, D 48,636

Int. Cl. B44d *1/092;* C23c *3/02*

U.S. Cl. 117—47 A **6 Claims**

Improved process for applying adherent metal coatings to nonconductors by the nonelectrolytic deposition of an electric conductor metal layer from an aqueous metal salt solution containing a reducing agent and a metal for catalyzing the deposition of the metal from the salt solution wherein the nonconductor to be metallized has incorporated therein a finely divided filler having functional groups capable of chemically binding the catalytic metal and of imparting the degree of roughness to the nonconductor surface required for the metallization.

3,701,676

PROCESS FOR IMPREGNATING AND SEALING CAST METAL SURFACES

Erich Bader, Hanau am Main, Karl G. Kannenberg, Grossauheim, and Hans-Benno Ricke, Kirchheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, and Buttner-Schilde-Haas AG, Krefeld, Germany

No Drawing. Filed May 20, 1970, Ser. No. 39,146

Claims priority, application Germany, May 22, 1969, P 19 26 126.8

Int. Cl. B44d *1/34*

U.S. Cl. 117—49 **3 Claims**

The surfaces of cast metal articles are impregnated and/or sealed by introducing into the pores of the metal a liquid polymerizable ester of methacrylic acid or acrylic acid or a mixture of both with at least one polyhydric alcohol whereupon the ester is cured in the absence of a polymerization catalyst. The application of the ester is effected upon application of pressure or of a vacuum or by applying, successively, both pressure and a vacuum. The polymerization is effected within the pores of the metal to improve the impermeability of the metal.

3,701,677

METHOD OF AFTER-TREATMENT OF METAL PLATINGS

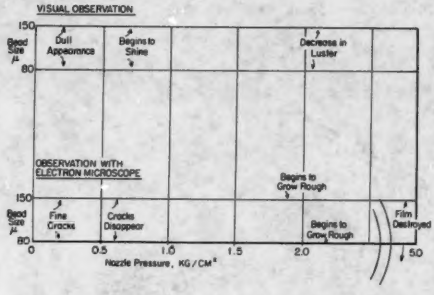
Akira Miyata, Hideyo Okubo, Chikayoshi Tomita, and Akio Suzuki, all % Nippon Kokan Kabushiki Kaisha Technical Institute, 2730 Minamiwataridachio, Kawasaki-shi, Kanagawa-ken, Japan

Continuation-in-part of abandoned application Ser. No. 698,416, Jan. 17, 1968. This application Oct. 29, 1970, Ser. No. 85,163

Int. Cl. B24c *1/00*

U.S. Cl. 204—35 R **3 Claims**

Metal articles plated with metals having a tendency of forming cracks in the deposited metals are subjected to



a jet stream of solid particles such as glass beads to eliminate the cracks.

3,701,678

FILM FOR LAYER CHROMATOGRAPHY

Hubert Rossler, Herbert Halpaap, and Knut Klatyk, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

No Drawing. Filed Feb. 20, 1970, Ser. No. 13,197

Claims priority, application Germany, Feb. 21, 1969, P 19 08 695.4

Int. Cl. B44d *1/14;* B01d *15/08*

U.S. Cl. 117—69 **14 Claims**

Coated films suitable for layer chromatography are obtained by applying the adsorbent coating to a polyester or other flexible plastic film whose surface is covered with a thin coherent coating of polymeric titanium dioxide and/or polymeric zirconium dioxide.

3,701,679

VINYL RESIN AND GRADED ACRYLIC RUBBER-URETHANE-ACRYLATE PAINT AND PAINTING PROCESS

Olin B. Johnson, Livonia, and Santokh S. Labana, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,540

Int. Cl. C08g *45/04*

U.S. Cl. 117—93.31 **34 Claims**

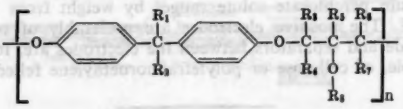
A radiation-curable paint binder dispersion comprises vinyl monomers, an alpha-beta olefinically unsaturated vinyl resin having molecular weight in excess of about 1,000 and, an addition product of a hydroxy-functional graded rubber particle, a diisocyanate and a hydroxyalkyl acrylate. The dispersion is applied to substrates and cured thereon by exposure to ionizing radiation, e.g., an electron beam.

3,701,680
POLYESTER FILM WITH PHENOXY RESIN COATING

Edward William Lee, Keith Reid Tatchell, Kenneth John Challis, and Kenneth Archibald Cockerton, Ilford, England, assignors to Ilford Limited, Ilford, Essex, England

No Drawing. Filed Feb. 8, 1971, Ser. No. 113,615
Int. Cl. G03c *1/80*
U.S. Cl. 117—138.8 F **2 Claims**

This application describes a process for the production of film base material which comprises treating one side of a film of synthetic linear polyester of highly hydrophobic character with an organic solvent solution of a phenolic adhesion promoting agent, removing the solvent and coating on to the treated side an organic solvent solution of an organic dicarboxylic acid half ester of a phenoxy resin which has the formula:



wherein each of R_1–R_7 is a hydrogen atom or a lower alkyl or cyclohexyl group, R_8 is a hydrogen atom or represents the acyl residue of a half ester of an organic dicarboxylic acid, n is at least 50, and from 10 to 95% of the R_8 groups are a said acyl residue.

3,701,681
MICROPOROUS COATINGS FOR TEXTILE FABRICS FROM CEMENTS OF POLYURETHANE IN DIMETHYLFORMAMIDE ADJUSTED TO pH RANGE 3 TO 6

Walter T. Murphy, 1091 Taft Ave., Cuyahoga Falls, Ohio 44223, and Archie B. Japs, 2884 Morewood Road, Akron, Ohio 44313

No Drawing. Filed Feb. 16, 1971, Ser. No. 115,819
Int. Cl. B44d *1/09*; B32b *27/40*
U.S. Cl. 117—161 KP **2 Claims**

Process for forming a microporous coating of linear polyurethane on a textile substrate.

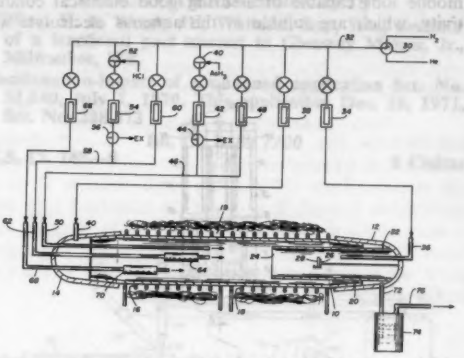
High cloud point, linear polyurethane cements in dimethylformamide containing a pyrogenic silica thixotropic viscosity improver exhibit improved states of viscosity stability when the pH, or apparent pH, of dimethylformamide plus silica is controlled in the range pH 3 to pH 6.

3,701,682
THIN FILM DEPOSITION SYSTEM

William W. Gartman and James G. Evans, Plano, and Harold A. Allen, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed July 2, 1970, Ser. No. 52,030
Int. Cl. B01j *17/30*
U.S. Cl. 117—201 **12 Claims**

A method and apparatus for chemical vapor phase deposition of semiconductor materials on a semiconductor substrate provides the capability for depositing continuous uniform films of semiconductor material less than 1 micron thick. A semiconductor substrate onto which a thin film is to be deposited is positioned and located in a zone of no flow or stagnation in a reactor enclosure. Gaseous reactants are continuously supplied to the reactor and are continuously withdrawn from the reactor along with by-products of the deposition reaction. The reactants contact the substrate by moving through the area of stagnation not by macroscopic vapor flow but by molecular diffusion from the area of flow through the stagnant area to the semiconductor substrate. The area of stagnation can also be provided with a backwash or flushing means which provides a positive mechanism for beginning and stopping diffusion into the stagnant

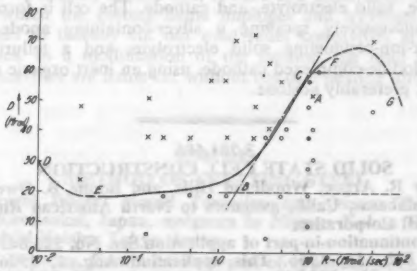


area, thus creating a deposition period of very definite length.

3,701,683
MANUFACTURE OF HIGH VOLTAGE INSULATED ELECTRIC CABLES

Graham Boyce Wills, London, and Frank Stanley Walker, Harpenden, England, assignors to British Insulated Callender's Cables Limited, London, England

Filed Jan. 13, 1971, Ser. No. 106,086
Claims priority, application Great Britain, Jan. 16, 1970, 2,290/70
Int. Cl. B44d *1/50*
U.S. Cl. 117—232 **5 Claims**



In the manufacture of a high voltage electric conductor by applying to a metallic conductor an insulating covering of an ethylene polymer at least 2.5 mm. thick and subjecting the covering to high energy radiation, the insulating covering is caused to absorb a dose D mrad in the range 20–60 mrad (preferably 25–55 mrad) at an average rate R mrad/sec. such that

$$R \geqslant e^{0.046(D-10)}$$

Irradiation with high energy electrons is preferred.

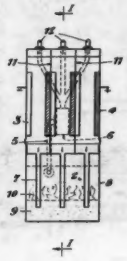
3,701,684
ZINC-ZINC HALIDE STORAGE BATTERY

Mario De Rossi, Rome, Italy, assignor to Consiglio Nazionale Delle Ricerche, Rome, Italy

Continuation-in-part of application Ser. No. 742,331, July 3, 1968. This application Dec. 29, 1969, Ser. No. 888,986
Claims priority, application Italy, May 2, 1968, 36,679/68
Int. Cl. H01m *43/02*
U.S. Cl. 136—30 **5 Claims**

Prior art electric storage batteries of the zinc-zinc halide aqueous solution type with a soluble cathode and a dis-

solved anode in circulating electrolyte are improved by (1) adding salts such as NH_4Cl and Cs_2SO_4 which have very mobile ions capable of assuring good electrical conductivity, which are soluble in the aqueous electrolyte and



which react with the zinc halide to obtain a zinc salt and a metallic halide both of which are only slightly soluble thereby giving a precipitate and (2) adding an organic solvent, insoluble in water.

3,701,685

PROCESS FOR A SOLID STATE CELL BY SPRAYING WITH AN ORGANIC SOLVENT

Guy Ervin III, Canoga Park, Calif., assignor to North American Rockwell Corporation

No Drawing. Filed July 21, 1970, Ser. No. 56,956
Int. Cl. H01m *21/00*
U.S. Cl. 136—83 R **6 Claims**

A sprayed-in-place solid state electric cell on a substrate surface, the cell consisting of overlying films of anode, solid electrolyte, and cathode. The cell is formed by successively spraying a silver-containing anode, a silver-ion-conducting solid electrolyte, and a tellurium tetraiodide-complexed cathode, using an inert organic solvent, preferably acetone.

3,701,686

SOLID STATE CELL CONSTRUCTION

Gary R. Argue, Woodland Hills, and Boone B. Owens, Calabasas, Calif., assignors to North American Rockwell Corporation

Continuation-in-part of application Ser. No. 526,842, Feb. 11, 1966. This application Aug. 1, 1966, Ser. No. 573,744
Int. Cl. H01m *21/00*
U.S. Cl. 136—83 **5 Claims**

A solid state electric cell having a solid electrolyte disposed between an anode and a cathode, and wherein solid electrolyte material is dispersed in at least the anode, and preferably in both the anode and the cathode. Preferably the dispersed electrolyte material is of substantially the same composition as the material of the solid state electrolyte.

3,701,687

ELECTRODE CONTAINING A CATALYTIC COATING OF PLATINUM, PALLADIUM, AND A THIRD METAL AND FUEL CELL UTILIZING SAME

Willard T. Grubb, Schenectady, N.Y., and Robert Anthony Macur, Milwaukee, Wis., assignors to General Electric Company

Original application Aug. 29, 1968, Ser. No. 756,120, now Patent No. 3,573,992, dated Apr. 6, 1971. Divided and this application Apr. 27, 1970, Ser. No. 31,946
Int. Cl. H01m *13/00*
U.S. Cl. 136—86 R **7 Claims**

An electrode is described which has a catalytic coating of platinum, palladium, and a third less noble metal on a substrate. Such an electrode provides a high performance anode for electrochemical cells.

3,701,688

NON-AQUEOUS ELECTROLYTE FOR LITHIUM ELECTROCHEMICAL GENERATORS

Jean-Paul Gabano, Poitiers, and Gerard Marcel Gerbier, Biard, France, assignors to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Pont de la Folie, Romainville, France

No Drawing. Filed July 27, 1970, Ser. No. 58,726
Int. Cl. H01m *11/00*
U.S. Cl. 136—100 R **6 Claims**

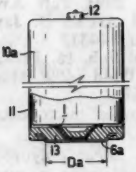
Electrochemical generators utilizing lithium negative electrodes and a solution of lithium perchlorate solute in organic solvent such as tetrahydrofuran together with an additional organic solvent selected from the group consisting of methyltetrahydrofuran, tetrahydropyran, isopropylamine, diethylamine, methylpyrrolidone and methylmorpholine. The range of tetrahydrofuran by weight is from about 70 to about 75% and the additional organic solvent ranges by weight from about 10 to 19% while the lithium perchlorate solute ranges by weight from 11 to 15%. The positive electrodes are preferably of copper sulfide and separators between the electrodes are, for example, of cellulose or polytetrafluoroethylene felted fabric.

3,701,689

PRIMARY CELLS

Ernst Karobath and Wolfgang Pulitzer, Vienna, Austria, assignors to Firma Telephon- und Telegraphen-Fabriks-Aktiengesellschaft Kapsch & Sohne, Vienna, Austria

Filed June 4, 1971, Ser. No. 149,902
Claims priority, application Austria, Aug. 21, 1970, A 7,620/70
Int. Cl. H01m *1/02*
U.S. Cl. 136—135 R **5 Claims**



A primary cell of the kind having a leak-proof casing made of a thermoplastic resin has a contact member which is embedded in the bottom of the casing to provide an external electrical connection to the negative electrode of the cell and which comprises a contact plate and a tubular conductor piece which is preferably cup-shaped with an inverted frusto-conical wall. The tubular conductor piece is embedded in the casing bottom with the material of the casing extending through a series of perforations spaced around the wall of the conductor piece, one end of the conductor piece being in electrical contact with the negative electrode and the other end being bonded to the contact plate. The contact plate has an exposed face externally of the casing bottom with a diameter greater than the diameters at both ends of the conductor piece.

3,701,690

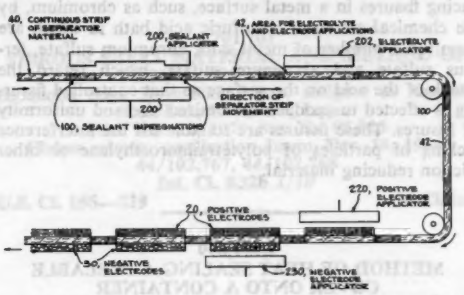
BATTERY HAVING SEALANT IMPREGNATED INTO SEPARATOR

William J. Dermody, Titusville, N.J., and John E. Oltman, Madison, Wis., assignors to ESB Incorporated

Filed Dec. 21, 1970, Ser. No. 99,983
Int. Cl. H01m *3/04*
U.S. Cl. 136—175 **16 Claims**

Patches of adhesive are impregnated into battery separator material, each patch being in the form of a closed

loop inside of which is an area of separator material not impregnated with the adhesive. Electrolyte is then impregnated into the area inside each patch of adhesive, after which the separator segments are assembled into batteries where the adhesive patches serve as seals.


40, CONTINUOUS STRIP OF SEPARATOR MATERIAL
200, SEALANT APPLICATOR
42, AREA FOR ELECTROLYTE AND ELECTRODE APPLICATIONS
202, ELECTROLYTE APPLICATOR
DIRECTION OF SEPARATOR STRIP MOVEMENT
100, SEALANT IMPREGNATIONS
220, POSITIVE ELECTRODE APPLICATOR
20, POSITIVE ELECTRODES
30, NEGATIVE ELECTRODES
230, NEGATIVE ELECTRODE APPLICATOR

Preferably the adhesive patches are nonconductive and are impregnated along continuous strips of separator material, and a further preference is to assemble the separator segments into the batteries which are structurally connected together by the continuous strips. After assembly of the batteries the continuous strips may be cut between patches of adhesive to obtain structurally unconnected batteries.

3,701,691

APPLIANCE FOR THE CATALYTIC RECONSTITUTION OF HYDROGEN AND OXYGEN GASES GENERATED BY ELECTRIC ACCUMULATORS INTO WATER

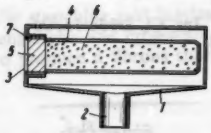
Guenter Sassmannshausen, Brilon, and Norbert Lahme, Hoppecke, Westfalen, Germany, assignors to Accumulatorenwerk Hoppecke Carl Zollner & Sohn KG, Hoppecke, Westfalen, Germany

Filed Dec. 22, 1970, Ser. No. 100,602

Claims priority, application Germany, Feb. 21, 1970, P 20 08 218.2

Int. Cl. H01m *1/08*

U.S. Cl. 136—179 **5 Claims**



Prior appliances for the catalytic reconstitution into water of the hydrogen and oxygen generated by electric accumulators suffer from the disadvantage that an appreciable amount of the gases or water vapour escape to the atmosphere. The invention provides a gas proof casing linked with the inside of the accumulator and containing a catalyst container inserted into the casing through an opening which is subsequently sealed by a porous element of high flow resistance. The casing may comprise the casing of the accumulator gas chamber.

3,701,692

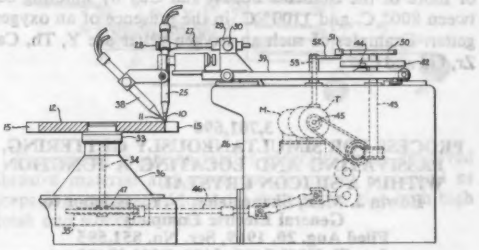
METHOD OF FLAME CUTTING MUD RELIEF CONCAVITIES IN SPROCKETS

William H. B. Wright III, Whitefish Bay, Wis., assignor of a fractional part interest to Glenway Maxon, Jr., Milwaukee, Wis.

Continuation-in-part of abandoned application Ser. No. 51,640, July 1, 1970. This application Dec. 16, 1971, Ser. No. 208,573

Int. Cl. B23k *7/00*

U.S. Cl. 148—9 **9 Claims**



While a sprocket is rotated on its axis, heating and cutting flames are directed toward one side thereof. The heating flame preheats zones of the sprocket between adjacent teeth thereof. The cutting flame is oriented to diverge sharply outwardly away from the sprocket axis, and it is moved radially in and out, toward and from inner limits at which the cutting flame impinges and traverses said zones to thereby cut out mud relief concavities at said zones. In a modification of the method, the mud relief concavities are flame cut without use of a heating torch.

3,701,693

METHOD OF TREATING STEEL

Hiroshi Iijima, Masaji Terasaka, and Osamu Tokita, Kawasakai, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 689,795, Dec. 12, 1967. This application Oct. 1, 1970, Ser. No. 77,372

Claims priority, application Japan, Dec. 17, 1966, 41/82,518

Int. Cl. C23f *7/24*

U.S. Cl. 148—6.24 **8 Claims**

Steel stocks are immersed in certain solutions and the solutions are heated and pressure is applied thereto to form a corrosion resistant and heat resistant protective film on the steel.

3,701,694

HEAT TREATMENT METHOD FOR FERRITE-PEARLITE STEEL

Tatsumi Osuka and Chiaki Oouchi, Kawasaki-shi, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Kawasaki-shi, Japan

No Drawing. Filed Nov. 19, 1969, Ser. No. 878,261

Claims priority, application Japan, Nov. 22, 1968, 43/85,179

Int. Cl. C21d *7/14*

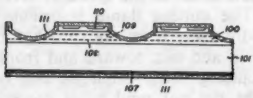
U.S. Cl. 148—12 **3 Claims**

The invention relates to a hot forming method for producing steel with a ferrite-pearlite structure. The steel of the invention has improved toughness.

3,701,695
METHOD OF MANUFACTURING A PERMANENT MAGNET
Kurt Heinz Jürgen Buschow and Frans Frederik Westendorp, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
No Drawing. Filed Apr. 28, 1970, Ser. No. 32,701
Claims priority, application Netherlands, May 14, 1969, 6907499
Int. Cl. H01f 1/08
U.S. Cl. 148—103 5 Claims

Method of manufacturing a M_5R magnet having a very high coercive force (M is a rare earth metal or Th or a combination thereof; R is Co or Co combined with one or more of the elements Fe, Ni and Cu) by sintering between 800° C. and 1100° C. in the presence of an oxygen getter. Examples of such an oxygen getter are Y, Th, Ca, Zr, Gd and Ce.

3,701,696
PROCESS FOR SIMULTANEOUSLY GETTERING, PASSIVATING AND LOCATING A JUNCTION WITHIN A SILICON CRYSTAL
Edwin J. Mets, Skaneateles, N.Y., assignor to General Electric Company
Filed Aug. 20, 1969, Ser. No. 851,595
Int. Cl. H01l 7/36, 5/00; B01j 17/00
U.S. Cl. 148—175 8 Claims



An epitaxial layer is deposited onto a silicon crystal with the layer and adjacent crystal surface being of opposite conductivity types and the epitaxial layer containing a higher impurity concentration. The adjacent crystal surface is then converted to the conductivity type of the epitaxial layer to displace the junction into the crystal away from the epitaxial layer. Silicon dioxide is formed on the exterior surfaces of the crystal to act as a passivation layer. Both steps are performed concurrently by heating the crystal in an oxidizing atmosphere. A stressed region may be formed on the crystal prior to heating that will trap fast diffusing impurity atoms during heating. In one form the silicon crystal is grooved so that the grooved surfaces intersect the final location of the junction, and the crystal is sub-divided along groove trough areas to form separately useable, discrete elements.

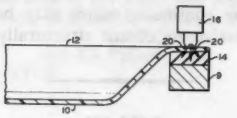
3,701,697
PRESSURE COMPENSATED PYROTECHNIC TIME DELAY COMPOSITION
Roswitha Zimmer-Galler, Niceville, Fla., and James E. Rose, Bryans Road, Md., assignors to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed May 27, 1971, Ser. No. 147,690
Int. Cl. C06b 11/00
U.S. Cl. 149—40 10 Claims

This invention relates to a pyrotechnic time delay composition which comprises tungsten, potassium perchlorate, barium chromate, diatomaceous earth, and a metal fluoride selected from the group consisting of magnesium fluoride, ceric fluoride, strontium fluoride, and calcium fluoride.

3,701,698
METHOD FOR PRODUCING FISSURES IN METALLIC SURFACES OF CHROMIUM
Clarence W. Forestek, 8160 Briarwood Drive, Broadview Heights, Ohio 44147
No Drawing. Filed Jan. 4, 1971, Ser. No. 103,873
Int. Cl. C23g 1/10
U.S. Cl. 156—18 10 Claims

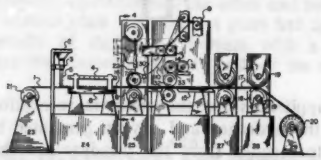
The process described herein involves a method of producing fissures in a metal surface, such as chromium, by the chemical action of a sulfuric acid bath in which are dissolved a number of metal salts, chromium sulfate, ferrous sulfate and aluminum sulfate, which retard the attack of the acid on the surface so that controlled fissuring is effected to produce the desired size and uniformity of fissures. These fissures are suitable for the interference locking of particles of polytetrafluoroethylene or other friction reducing material.

3,701,699
METHOD OF HEAT SEALING A PEELABLE COVER ONTO A CONTAINER
James C. Jackson, Kansas City, Mo., assignor to Phillips Petroleum Company
Filed Aug. 11, 1969, Ser. No. 848,910
Int. Cl. B29c 27/00
U.S. Cl. 156—69 4 Claims



A cover adapted to be removed by peeling is sealed to a container by depressing a cover of heat sealable material and a substantially flat, peripheral container edge of heat sealable material together with a force that is substantially perpendicular to the area being depressed.

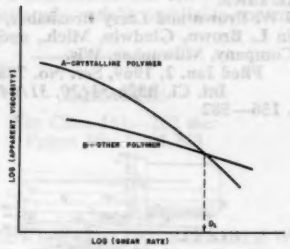
3,701,700
PROCESS FOR PRODUCING A CONTINUOUS NON-WOVEN FABRIC
Elmer J. von der Heide, Hudson, Ohio, assignor to Thiokol Chemical Corporation, Bristol, Pa.
Original application Dec. 28, 1966, Ser. No. 605,346. Divided and this application Aug. 5, 1970, Ser. No. 61,411
Int. Cl. D05c 15/00
U.S. Cl. 156—72 6 Claims



A backing for non-woven fabric made from particulate thermoplastic material eliminates residual stress in thermoplastic backings. The fabric is produced by spreading particulate thermoplastic to a uniform depth, heating the thermoplastic until the particles are fused; applying

face material to the thermoplastic, and then cooling the thermoplastic whereby the face material is locked therein. The yarn is applied to the backing from a rotating drum having peripheral pockets into which the yarn is inserted to form loops. After application of the yarn the fabric may be embossed or printed.

3,701,701
FIBROUS SHEET MATERIAL AND METHOD OF PRODUCING THE SAME
Hidenobu Sogi, Kurashiki, Japan, assignor to Kuraray Co., Ltd., Kurashiki, Japan
Filed Dec. 10, 1970, Ser. No. 96,820
Claims priority, application Japan, Dec. 19, 1969, 44/102,767, 44/102,768
Int. Cl. B32b *3/10*
U.S. Cl. 156—229 **16 Claims**



The fibrous sheet material obtained by the method comprising:

(i) extruding a molten mixture of 30 to 70 volume percent of a crystalline polymer (1) and 70 to 30 volume percent of another polymer (2), which is incompatible with said crystalline polymer (1) and has a lower apparent melt viscosity than the crystalline polymer (1) under the extrusion conditions to make a film consisting of said mixture, in which the crystalline polymer (1) forms the discontinuous phase and the latter polymer (2) forms the continuous phase in said film, and having the crystalline orientation in the longitudinal axis of the film;

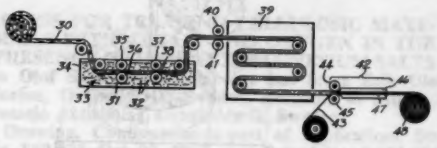
(ii) laminating more than two films in an orientation such that at least two of said films are in directions at an angle of 60 to 120° with respect to each other, and then

(iii) biaxially stretching said laminate to 2 to 4 times in both lengthwise and crosswise directions simultaneously to produce a fibrous sheet material.

3,701,702
METHOD OF FREE CURING RUBBER
Daniel Shichman, Cedar Grove, and Sung Whee Hong, Wayne, N.J., assignors to Uniroyal, Inc., New York, N.Y.
Filed Aug. 25, 1970, Ser. No. 66,753
Int. Cl. B29c *25/00*
U.S. Cl. 156—244 **31 Claims**

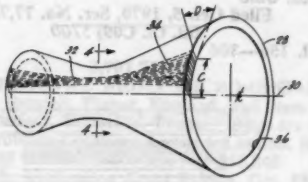
A vulcanizable rubber is modified by the addition of a resin at a temperature above the melting point of said resin, whereupon curatives and other additives are added to the blend at a temperature below the melting point of said resin. A shaped article is formed from the resulting blend and cured without restraining pressure at a temperature below the melting point of said resin.

3,701,703
METHOD OF MAKING AN ABRASIVE FOAM LAMINATE
William F. Zimmer, Jr., Paxton, Mass., and Harvey L. Chew, Latham, N.Y., assignors to Norton Company, Troy, N.Y.
Original application Dec. 4, 1969, Ser. No. 882,110, now Patent No. 3,653,859. Divided and this application July 12, 1971, Ser. No. 161,570
Int. Cl. B32b *31/12, 5/18;* **B24d** *11/00*
U.S. Cl. 156—278 **3 Claims**



The present invention relates generally to an improved abrasive material and more specifically to a method of preparing an abrasive material designed to give both high finish and stock removal.

3,701,704
METHOD OF FABRICATING A ROCKET NOZZLE LINER
Aram J. Dervy, Santa Monica, Calif., assignor to McDonnell Douglas Corporation
Filed May 18, 1970, Ser. No. 38,264
Int. Cl. B32b *31/18, 31/20;* **F02k** *1/24*
U.S. Cl. 156—297 **22 Claims**

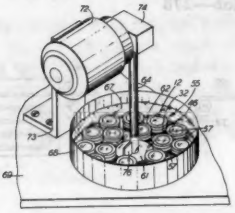


Rocket nozzle liner is formed from substantially identical longitudinal segments which have been circumferentially fused together into an integral unit. Rectangular flakes are preferably cut from cloth material having good insulative and ablative properties to provide flakes of the same width but of different lengths, the length of a flake being a function of the nozzle liner thickness at the longitudinal point where such flake is to be used. The flakes are preferably cut so that the dominant warp filaments of each flake are generally parallel to its length, and each liner segment is molded from suitably arranged flakes to provide a segment having predetermined warp filaments orientations therein.

3,701,705
FLUIDIC MASKING APPARATUS FOR ETCHING
Harold Arthur Hetrich, Reading, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed June 7, 1971, Ser. No. 150,345
Int. Cl. H05k *3/00;* **C23f** *1/04*
U.S. Cl. 156—345 **4 Claims**

In making a target for a television camera tube, it is necessary to thin the backside of a semiconductive substrate, which is opposite a face having a diode array thereon. To thin the substrate, it is positioned face down

on a fluid nondeleterious to the substrate and diode array. The fluid is contained in a cavity of a holding device. The positioning is such that there is no space between the fluid and the substrate. An apertured top member is then mounted on the substrate and the holding device to retain the substrate on the fluid. The assembly of the holding device and top member with the substrate therebetween



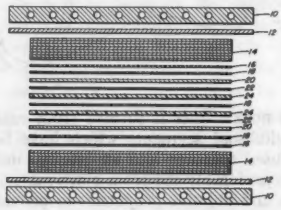
is immersed and rotated in an etchant to thin the backside of the substrate through the aperture of the top member. The fluid provides a tight seal on the face of the substrate to prevent the etchant from damaging such face and the diode array thereon. A vent extending from the cavity of the holding device to its outer edge assists in the subsequent removal of the substrate from the cavity.

3,701,706

PROCESS FOR PREPARING A DECORATIVE LAMINATE IN WHICH A THERMOPLASTIC FILM IS USED TO ABSORB THERMAL SHOCK SHEAR STRESS

Sydney Arthur Giddings and Paul Nicholas Valerius, Cincinnati, Ohio, assignors to Formica Corporation, Cincinnati, Ohio

Filed Oct. 5, 1970, Ser. No. 77,794
Int. Cl. C09j *5/00*
U.S. Cl. 156—306 **10 Claims**



A process for preparing a decorative laminate surfaced with a transparent thermoplastic film in which a removable film of polypropylene is utilized in order to absorb thermal shock and shear stress in the production of a high pressure laminate.

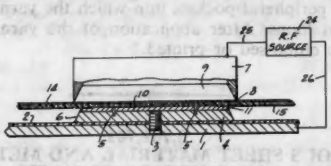
3,701,707

APPARATUS FOR MAKING HEAT-SEALED ARTICLES

Carl W. Scholl and Milo L. Raffaelli, Sr., Chicago, Ill., assignors to Scholl, Inc., Chicago, Ill.

Original application Feb. 16, 1967, Ser. No. 616,721, now Patent No. 3,520,754, dated July 14, 1970. Divided and this application Feb. 2, 1970, Ser. No. 7,630
The portion of the term of the patent subsequent to July 14, 1987, has been disclaimed
Int. Cl. B29c *19/02*
U.S. Cl. 156—380 **6 Claims**

The invention relates to apparatus including die means for electronically heat sealing thermoplastic cover material to a more rigid backing member. The backing member, if not of thermoplastic material, is striped with ther-



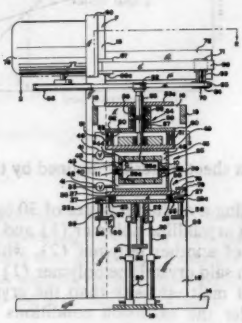
moplastic material and the cover material is heat sealed to the side edge and a marginal area of the rear or otherwise uncovered face of the backing member.

3,701,708

APPARATUS FOR FRICTION WELDING SYNTHETIC PLASTIC CONTAINER PARTS AND THE LIKE

Gaylord W. Brown and Larry Brushaber, Beaverton, and Melvin L. Brown, Gladwin, Mich., assignors to Koehring Company, Milwaukee, Wis.

Filed Jan. 2, 1969, Ser. No. 788,536
Int. Cl. B32b *31/20, 31/04*
U.S. Cl. 156—582 **11 Claims**



Apparatus and methods for friction welding thermoplastic synthetic plastic container parts of non-cylindrical configuration wherein a holder for one part is moved toward another holder for a second part to engage the respective surafces of the parts to be friction welded, and wherein an eccentric shaft extending substantially perpendicularly to the surfaces to be welded together oscillates one of the holders and parts relative to the other in the plane of engagement of the surfaces for a time sufficient to achieve a friction weld of the surfaces, sensing means being provided in the path of movement of the holder for the non-oscillated part which senses when the weld is achieved and is connected to disable the drive for oscillating the one holder, for withdrawing one holder relative to the other to permit unloading and reloading, and for releasing the vacuum employed by the holders to hold the parts.

3,701,709

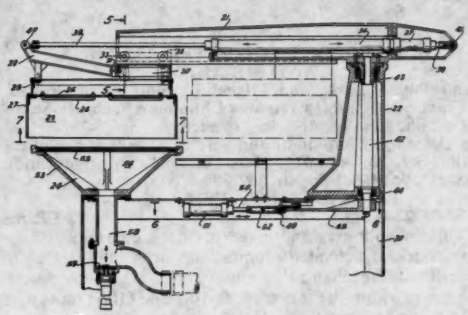
METHOD AND MEANS FOR HEAT BONDING

Giacomo Bianchini, Bollate Milan, Italy, assignor to DHJ Industries, Inc., New York, N.Y.

Filed Apr. 9, 1970, Ser. No. 26,851
Int. Cl. B30b *15/34;* B29c *19/02*
U.S. Cl. 156—583 **5 Claims**

A method and means for heat bonding materials together utilizing two spaced cooperating plates wherein the

first of said plates supports the material to be bonded and through which a vacuum is applied and the second of said



plates supports a heat source and there is relative movement of said plates substantially parallel to one another.

ERRATUM

For Class 161—262 see:
Patent No. 3,701,743

3,701,710

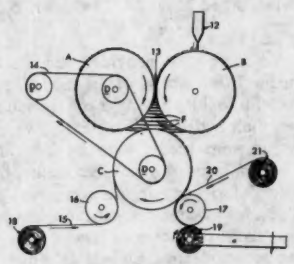
ADHESIVELY LAMINATED FLEXIBLE WEBS

Leo M. Germain, Shawinigan, Quebec, Canada, assignor to Gulf Oil Canada Limited, Toronto, Ontario, Canada

Original application Oct. 21, 1968, Ser. No. 769,243, now Patent No. 3,629,027. Divided and this application Jan. 25, 1971, Ser. No. 109,718

Int. Cl. B32b *7/14*

U.S. Cl. 161—148 **3 Claims**



This invention provides a laminated web comprising a lamina of paper tissue and another flexible lamina adhesively secured thereto by filaments of adhesive fine enough to preclude them from obviously affecting the properties of the combined lamina.

3,701,711

DECORATIVE ALUMINUM CLAD LAMINATE

Peter Bernard Kelly, Cincinnati, Ohio, assignor to Formica Corporation, Cincinnati, Ohio

No Drawing. Filed May 20, 1971, Ser. No. 145,568

Int. Cl. B32b *15/08, 15/12, 15/30*

U.S. Cl. 161—214 **9 Claims**

A decorative aluminum clad laminate comprising a heat and pressure consolidated assembly of (1) a rigidity imparting base member, (2) an alpha cellulose paper decorative layer wherein the alpha cellulose layer contains from about 30% to 70% by weight of a thermosetting melamine formaldehyde resin, having a mole ratio between about 1:1.5 to 1:2.5 melamine to formaldehyde respectively, (3) positioned on the decorative layer is an adhesive copolymer film of ethylene and acrylic acid and (4) an aluminum foil positioned on the copolymer film.

3,701,712

PROCESS FOR TREATING CELLULOSIC MATERIALS WITH ALKALI AND OXYGEN IN THE PRESENCE OF COMPLEX MAGNESIUM SALTS

Hans Olof Samuelson, Goteborg, and Sture Erik Olof Noréus, Ornskoldsvik, Sweden, assignors to Mo Och Domsjo Aktiebolag, Ornskoldsvik, Sweden

No Drawing. Continuation-in-part of applications Ser. No. 869,875, Oct. 27, 1969, now Patent No. 3,652,386, and Ser. No. 36,670, May 12, 1970, now Patent No. 3,652,385. This application Feb. 26, 1971, Ser. No. 119,369

Claims priority, application Sweden, Mar. 2, 1970, 2,732/70

Int. Cl. D21c *9/10*

U.S. Cl. 162—65 **41 Claims**

A process is provided for treating cellulosic materials with alkali in the presence of oxygen, and particularly air, and in the presence of complex magnesium salts of aminopolycarboxylic acids or alkali metal salts thereof. The invention is of particular application to the reduction of lignin content in cellulose pulps and the digestion of wood cellulose without causing deleterious degradation of the cellulose, the complex magnesium salts reducing or entirely preventing attack of oxygen on hemicellulose and cellulose carbohydrates, without appreciably diminishing the oxidation of the lignin and its dissolution in the course of the process.

3,701,713

SOLVENT REMOVAL FROM MICRO-ORGANISMS

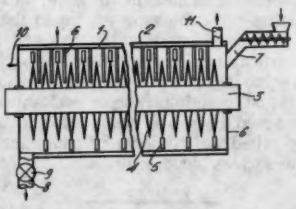
Ian Cameron Bennett, Pinner, England, and Jean Amaudric du Chaffaut, Marseille, France, assignors to The British Petroleum Company Limited, London, England

Filed Oct. 16, 1969, Ser. No. 866,840

Claims priority, application Great Britain, Oct. 18, 1968, 49,547/68

Int. Cl. C12b *1/00*

U.S. Cl. 195—28 R **4 Claims**



A method for removing solvent from a micro-organism containing fermentation product which has been produced by cultivating a micro-organism in the presence of a hydrocarbon and subjecting the cultivated micro-organism to a solvent extraction treatment to remove residual hydrocarbon. The method consisting essentially of passing steam over the heated fermentation product in such a manner as to maintain in the product a certain minimum water content whilst the solvent is being removed.

3,701,714
PROCESSES FOR THE PRODUCTION OF OLIGOSACCHARIDES HAVING FRUCTOSE MOLECULES ON THEIR REDUCING ENDS
Shigetaka Okada, Nara, and Naoto Tsuyama, Okayama, Japan, assignors to Hayashibara Company, Okayama-shi, Okayama, Japan
No Drawing. Filed Feb. 23, 1971, Ser. No. 118,193
Claims priority, application Japan, Feb. 24, 1970, 45/15,692
Int. Cl. C12b *1/00*
U.S. Cl. 195—31 R 6 Claims

Process for the production of oligosaccharide mixtures having fructose molecules on their reducing ends (oligosyl fructose) by subjecting mixtures of starch, sucrose or fructose to the actions of specific alpha-amylases, and thus with the utilization of the alpha-amylases, attaining simultaneous hydrolysis of starch and transfer of the formed oligosaccharides into sucrose or fructose.

3,701,715
METHOD FOR THE PRODUCTION OF GLUCOSE OXIDASE
Krishnaiyer Lakshminarayanan, Harbor Beach, Mich., assignor to Dawe's Laboratories, Inc., Chicago Heights, Ill.
No Drawing. Filed Feb. 4, 1971, Ser. No. 112,806
Int. Cl. C12d *13/10*
U.S. Cl. 195—65 19 Claims

This invention is addressed to an improved method for the preparation of glucose oxidase in which glucose oxidase-producing strains of the genera Aspergillus and Penicillium are cultivated in medium having a low carbohydrate content in which the carbohydrate has a dextrose equivalent of 60–85, in the presence of hydrated magnesium sulfate, monopotassium phosphate, and a source of assimilable nitrogen in the form of a nitrate salt or an ammonium salt.

3,701,716
LIQUID ANALYSIS APPARATUS
Rudolf Deuringer, El Toro, and Robert A. Ray and James C. Sternberg, Fullerton, Calif., assignors to Beckman Instruments, Inc.
Filed Apr. 15, 1969, Ser. No. 816,329
Int. Cl. C12k *1/10*
U.S. Cl. 195—127 13 Claims

An apparatus for batch analysis of liquid samples wherein syringes are employed for delivering repeatable volumes of reagent to a cell prior to the addition of a sample and for withdrawing liquid from the cell after analysis thereof. Sensing means, such as a polarographic oxygen sensor, is mounted in the side wall of the cell with its sensing end contacting the liquid therein. A stirring element is positioned within the cell and rotated about the vertical axis of the cell so that a high tangential stirring force is produced to promote mixing of sample with reagent and to optimize sensor performance, yet only small sample volumes are required. The apparatus is particularly suited for rate sensing batch analysis of biological fluids such as blood or urine.

3,701,717
SUBSTRATE-CONTAINING TEST CONTAINER FOR THE CULTIVATION AND INSPECTION OF MICRO-ORGANISMS
Helmuth Ingvorsen, 8 Algade, 4000 Roskilde, Denmark
Filed Feb. 25, 1970, Ser. No. 13,937
Claims priority, application Great Britain, Feb. 26, 1969, 10,373/69; Sept. 5, 1969, 44,127/69
Int. Cl. C12k *1/10*
U.S. Cl. 195—139 1 Claim

Substrate-containing test container for the cultivation and inspection of micro-organisms comprising a coating of said substrate on the inner surface of the side walls of said container and an insert means for supporting said coating.

3,701,718
HIGH-POROUS ACTIVATED ALUMINA AND METHOD
Denis Papee, Paris, and Michel Lavalou, Saint-Gratien, France, assignors to Produits Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France
No Drawing. Continuation-in-part of abandoned application Ser. No. 410,315, Nov. 10, 1964. This application Sept. 29, 1969, Ser. No. 862,090
Int. Cl. B01j *11/32*; C01f *7/02, 7/44*
U.S. Cl. 23—141 12 Claims

This invention is addressed to the preparation of agglomerates of activated alumina having a high degree of porosity and mechanical strength and in which the porous volume is within the range of 50–100 $cm.^3/100$ grams with a large number of pores having a diameter greater than 0.1 micron in which dehydrated alumina is reduced to a particle size within the range of 1 to 25 microns and impregnated with water, with or without mixture with an organic naphthalene type material and in which the amount of water is limited to an amount which does not exceed the porous volume of the particles by more than 8 percent. The impregnated particles are molded into agglomerates, aged and then reactivated by calcination at elevated temperatures.

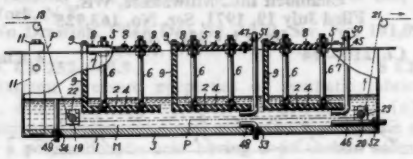
3,701,719
CONTINUOUS ELECTROCHEMICAL PROCESS FOR REACTION OF COMPOUNDS CONTAINING ALIPHATIC UNSATURATION
Joseph-Adrien M. Leduc, Short Hills, and Charles Lurie, Plainfield, N.J., and Walter Kronig and Peter Konrad, Leverkusen, Germany, assignors to Pullman Incorporated, Chicago, Ill., and Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany, fractional part interest to each
No Drawing. Filed Mar. 24, 1969, Ser. No. 809,962
Int. Cl. B01k *1/00*
U.S. Cl. 204—131 29 Claims

A preferred method is provided for the treatment of aqueous media from which olefin oxide has been separated, the olefin oxide having been produced from an olefin via a halohydrin intermediate, which comprises treating the aqueous media with an inorganic oxidizing agent such as a halogen, a metal hypohalite, hydrogen peroxide or ozone-enriched air after removal of the olefin oxide product followed by separation or destruction of contaminants from the aqueous media prior to recirculation thereof to an electrolytic cell in which the halogen required to form the halohydrin from the olefin is generated.

3,701,720
MANUFACTURE OF ELECTRICALLY INSULATING PAPER
Hideo Fujita, Masami Ishitobi, Hiroyoshi Suga, Keishiro Ishiwari, Yoshikazu Yotsui, Tadao Yamashita, Masayuki Edamitsu, and Shokichi Moriwaki, Amagasaki-shi, Japan, assignors to Dainichi Nippon Cables Ltd., Amagasaki-shi, Hyogo-ken, Japan
Filed Nov. 24, 1969, Ser. No. 879,187
Int. Cl. B01k *1/00*
U.S. Cl. 204—132 25 Claims

A method for producing electrically insulating paper having a reduced dielectric dissipation factor comprises continuously passing paper through a liquid medium which has a conductivity of at least 10 micro mhos/cm.

and which is filled between at least one pair of electrodes disposed in facing relationship with each other. Voltage is



applied to the electrodes to thereby remove ionic substances from the paper and the treated paper is dried.

3,701,721

CURABLE LIQUID POLYENE-POLYTHIOL COMPOSITIONS CONTAINING POLYACRYLIC ACID AND DERIVATIVES THEREOF

Edwin W. Lard, Bowie, Md., assignor to W. R. Grace & Co.

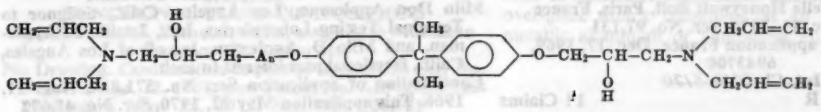
No Drawing. Original application Nov. 2, 1970, Ser. No. 86,355. Divided and this application Dec. 6, 1971, Ser. No. 205,432

Int. Cl. B01j *1/00;* **C08d** *1/00*

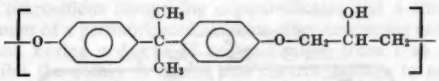
U.S. Cl. 204—159.16 **9 Claims**

A curable liquid composition consisting essentially of:

(a) a polyene having the formula



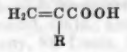
where A is



and *n* is essentially 0 or greater (e.g., 0–20); and

(b) a polythiol, the equivalent ratio of polyene to polythiol being about 1:0.5–1.5; and

(c) a member selected from a group consisting of a monomeric acid having the formula



where R is H, CH_3, or C_2H_5 or a homopolymer or copolymer of such monomeric acid having an average molecular weight of about 140–1000, the group member constituting about 2–10% by weight of the composition.

The above composition can contain an effective amount of a photocuring rate accelerator.

3,701,722

PREPARATION OF α-HALOKETONES USING ULTRAVIOLET LIGHT

David C. Heckert, Oxford, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed June 16, 1971, Ser. No. 153,845

Int. Cl. B01j *1/10*

U.S. Cl. 204—162 R **13 Claims**

A process for preparing α-haloketones from olefins, oxygen, and a hydrogen halide using a metal salt catalyst and ultraviolet light. Such haloketones are useful as intermediates in the preparation of fabric softening and surfactant compounds.

3,701,723

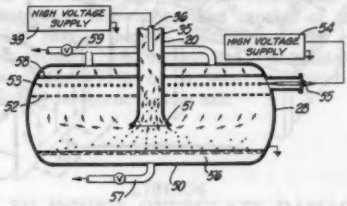
ELECTRIC TREATMENT OF DISPERSIONS

Ernest A. Cole, Weldon D. Mayse, and Frederick D. Watson, Houston, Tex., assignors to Petrolite Corporation, St. Louis, Mo.

Original application July 25, 1969, Ser. No. 844,963. Divided and this application Feb. 22, 1971, Ser. No. 117,264

Int. Cl. B03c *5/00;* **B01d** *13/02*

U.S. Cl. 204—188 **3 Claims**



Process and apparatus for coalescing liquid droplets, such as water, dispersed in an oil distillate, such as gasoline or kersosene. Coalescing process and apparatus utilizing a unidirectional electric field between elongate electrodes with a high voltage gradient and a high rate of flow in the space between the electrodes. Coalescing process and apparatus wherein the coalesced liquid is maintained within the distillate and is separated from the distillate downstream of the coalescing electrodes.

3,701,724

ELECTRODES FOR ELECTROCHEMICAL PROCESSES

John Hubert Entwisle, Denis Lee, and Anthony Scrutton, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Oct. 3, 1969, Ser. No. 863,705

Claims priority, application Great Britain, Oct. 18, 1968, 49,479/68

Int. Cl. B01r *3/04*

U.S. Cl. 204—290 F **5 Claims**

An electrode for use in electrochemical processes comprising a film-forming metal support member and a coating thereon consisting of (a) an operative electrode material, e.g., a platinum group metal oxide, in minor amount and (b) one or more of tin dioxide, antimony pentoxide, antimony tetroxide and germanium dioxide in major amount.

3,701,725

APPARATUS FOR ELECTROPOLISHING OF DRILLED SURGICAL NEEDLES

Howard Beroff, Somerville, and Ernest L. Richmond, North Plainfield, N.J., assignors to Ethicon, Inc., Somerville, N.J.

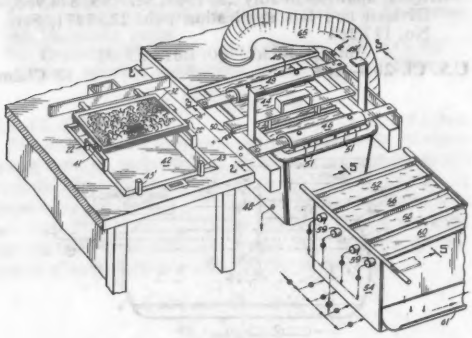
Original application Jan. 29, 1970, Ser. No. 6,878. Divided and this application Sept. 22, 1971, Ser. No. 182,798

Int. Cl. C23b *5/70, 3/06;* **B01k** *3/04*

U.S. Cl. 204—297 M **4 Claims**

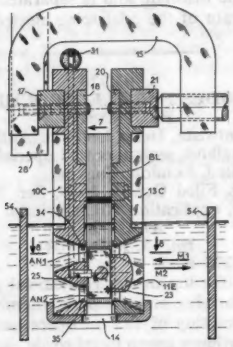
A large number of steel surgical needles are supported on a platinum gauze anode in a magnetic field and immersed in an orthophosphoric acid electropolishing bath.

The needles supported on the anode are polished by a current that flows through the solution, and needles to



produce a smooth needle surface that is free of flaws at the point of contact with other needles on the anode.

3,701,726
SUPPORT ASSEMBLY FOR ELECTROLYTIC DEPOSITION ON CONTACT ELEMENT
Bernard Andre Laboue, Goussainville, France, assignor to Société Industrielle Honeywell Bull, Paris, France
Filed Dec. 11, 1970, Ser. No. 97,131
Claims priority, application France, Dec. 17, 1969, 6943700
Int. Cl. C23b *5/70*
U.S. Cl. 204—297 R **14 Claims**

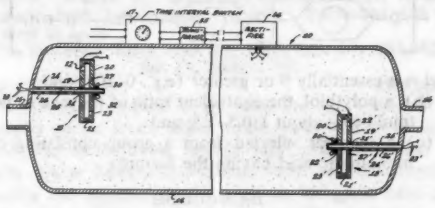


A support providing for the selective electroplating of the contact points of a pair of contact elements having arch-shaped portions, each element having a contact point at each extremity of the arch-shaped portions thereof, the two contact elements being electroplated with the arch-shaped portions thereof mutually opposed; whein an insulated spacing member extends between the two arch-shaped portions to protect such portions from the electroplating solution, but wherein the contact points extend beyond the spacing member; wherein a flat electrode is supported by the spacing member and extends between each opposed pair of contact points of the contact elements, and wherein when the support is immersed in an electrolytic solution, metal is selectively deposited on the contact points opposite to the electrode.

3,701,727
TWO-STAGE AEROBIC AND FACULTATIVE WASTE TREATMENT
Richard A. Kormanik, Milwaukee, Wis., assignor to Rex Chainbelt Inc., Milwaukee, Wis.
Filed July 19, 1971, Ser. No. 163,925
Int. Cl. C02c *1/02*
U.S. Cl. 210—14 **2 Claims**

A biodegradable waste is treated aerobically by high-rate aeration and mixing in a first basin for a critical period followed by low-rate aeration and mixing in the upper zone of a second basin and from which the effluent is withdrawn. The solids which settle to the lower zone decompose under anaerobic conditions and the liquid decomposition products are treated aerobically as they more upwardly from the lower into the upper zone. The second basin operates as a modified facultative lagoon.

3,701,728
WATER PURIFICATION SYSTEM
Milo Don Appleman, Los Angeles, Calif., assignor to Terminal Testing Laboratories, Inc., Lucille E. Appleman, and Milo D. Appleman, Jr., all of Los Angeles, Calif., fractional part interest to each
Continuation of application Ser. No. 571,834, Aug. 11, 1966. This application May 22, 1970, Ser. No. 41,672
Int. Cl. B01d *15/04;* **C02b** *1/36*
U.S. Cl. 210—29 **4 Claims**



A method of purifying water which comprises introducing bacteriacidal chlorine directly into, or just prior to purification media for said water at concentrations substantially above potable limits so that essentially all of the chlorine is available for reaction to kill microorganisms trapped in said purification material.

3,701,729
OIL-SOLUBLE MIXED COPPER SOAP PRODUCTS
Alfred Fischer, Bronx, N.Y., and Terry M. Strawser, Bound Brook, N.J., assignors to Tenneco Chemicals Inc.
No Drawing. Filed June 1, 1970, Ser. No. 42,536
Int. Cl. C10m *3/18, 5/14*
U.S. Cl. 252—1 **28 Claims**

Oil-soluble mixed copper soaps of structurally different organic monocarboxylic acids, the acids being selected from the group consisting of saturated aliphatic acids and olefinic acids, and solutions of such mixed soaps are provided.

3,701,730
EXTREME PRESSURE PROPERTIES OF SYNTHETIC LUBRICANTS
David A. Daniels, Kendall Park, and Kenneth T. Wendler, Freshold, N.J., assignors to W. R. Grace & Co., New York, N.Y.
No Drawing. Filed Dec. 23, 1970, Ser. No. 101,098
Int. Cl. C10m *1/46, 1/30*
U.S. Cl. 252—49.9 8 Claims

Extreme pressure properties of synthetic lubricants, e.g., esters, are improved by the addition of (a) dibrominated neopentyl glycol ester, (b) a phosphate ester, (c) a polycarboxylic acid having 2–54 carbon atoms, or (d) combinations of (a), (b) and (c).

3,701,731
LIQUID TONERS FOR ELECTROPHOTOGRAPHY CONTAINING 12-HYDROXY STEARIN
Robert James Hercock and Simon Lindsay Scrutton, Ilford, England, assignors to Ilford Limited, Ilford, England
No Drawing. Filed Feb. 9, 1971, Ser. No. 114,083
Claims priority, application Great Britain, Feb. 10, 1970, 6,399/70
Int. Cl. G03g *9/04*
U.S. Cl. 252—62.1 3 Claims

A liquid toner for use in an electrophotographic process which comprises a suspension of charged pigment particles in an inert liquid carrier, there being dispersed in the suspension 12-hydroxy stearin.

3,701,732
FUNCTIONAL FLUID COMPOSITIONS
Terrill D. Smith, Edmond, Okla., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Continuation-in-part of application Ser. No. 715,175, Apr. 22, 1968, now Patent No. 3,597,359. This application Mar. 26, 1971, Ser. No. 128,526
Int. Cl. C09k *3/00*
U.S. Cl. 252—78 18 Claims

Compositions comprising organo-silicates and a small amount of a perfluorinated alkylene ether-containing compound having a degree of polymerization from 1 to 50 exhibit the ability to inhibit and control damage to mechanical members in contact with said compositions. The compositions have many uses, among which are their use as hydraulic fluids.

3,701,733
FUNCTIONAL FLUID COMPOSITIONS
Terrill D. Smith, Edmond, Okla., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Continuation-in-part of application Ser. No. 715,175, Mar. 22, 1968, now Patent No. 3,597,359. This application Mar. 26, 1971, Ser. No. 128,576
Int. Cl. C09k *3/00*
U.S. Cl. 252—78 16 Claims

Compositions comprising amides of an acid of phosphorus and a small amount of a perfluorinated alkylene ether-containing compound having a degree of polymerization from 1 to 50 exhibit the ability to inhibit and control damage to mechanical members in contact with said compositions. The compositions have many uses, among which are their use as hydraulic fluids.

3,701,734
OIL ABSORBENT SLAG COMPOSITIONS
Arthur H. Stover, 125 Cross St., Wintersville, Ohio 43952
No Drawing. Filed Dec. 16, 1970, Ser. No. 98,861
Int. Cl. B41f *1/30;* C04b *7/14;* E06b *7/02*
U.S. Cl. 252—88 4 Claims

Oil absorbent slag compositions are prepared by hydraulically decomposing molten slag from an electric smelting furnace and roasting the crushed slag at elevated temperatures.

3,701,735
AUTOMATIC DISHWASHING COMPOSITIONS
Patricia A. Finck, Bayonne, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Filed Apr. 12, 1971, Ser. No. 133,338
Int. Cl. C11d *7/18, 7/38*
U.S. Cl. 252—99 9 Claims

A cleaning composition particularly adapted for washing dishes, glasses and silverware in mechanical devices such as automatic dishwashers and capable of reducing spotting and filming thereof, containing as the essential ingredients about 1–20% sucrose, 0.5–5% halide bleaching agent, and 40–95% of at least one water-soluble organic and/or inorganic builder salt.

3,701,736
MEANS TO INHIBIT OVERGLAZE DAMAGE BY AUTOMATIC DISHWASHING DETERGENTS
Amory Earl Austin, Colonia, and Charles L. Bechtold, Edison, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Filed Apr. 12, 1971, Ser. No. 133,340
Int. Cl. C11d *7/18, 7/56*
U.S. Cl. 252—99 9 Claims

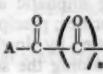
A cleaning composition particularly adapted for washing dishes, glasses and silverware in mechanical devices such as automatic dishwashers and capable of inhibiting over-glaze attack containing as an essential ingredient metallic aluminum or aluminium alloy.

3,701,737
SODIUM CARBONATE-SODIUM BICARBONATE AGGLOMERATES
David Goldstein, East Brunswick, N.J., assignor to FMC Corporation, New York, N.Y.
No Drawing. Filed Oct. 30, 1970, Ser. No. 85,779
Int. Cl. C09k *3/00;* H05b *33/00*
U.S. Cl 252—182 10 Claims

A low bulk density, absorptive agglomerate containing both sodium carbonate and sodium bicarbonate values, for use in mild detergent formulations, is produced by (a) agglomerating fine soda ash particles with water, (b) carbonating the resulting wet sodium carbonate monohydrate with carbon dioxide to obtain carbonated agglomerates having an $NaHCO_3$:Na_2CO_3 mole ratio of about 0.4:1 to about 1.5:1 as the product.

3,701,738
CHEMILUMINESCENT IMPROVEMENTS
Bernard George Roberts, 13 Harstrom Place, Rowayton, Conn. 06853, and Michael McKay Rauhut, 7 Douglas Drive, Norwalk, Conn. 06850
No Drawing. Continuation of application Ser. No. 866,383, Oct. 14, 1969, which is a continuation-in-part of application Ser. No. 577,596, Sept. 7, 1966. This application Apr. 29, 1971, Ser. No. 138,799
Int. Cl. C09k *3/00*
U.S. Cl. 252—188.3 5 Claims

A superior chemiluminescent composition for providing visible light, the composition containing (1) a bis-derivative of a polycarbonyl compound of the formula:



where A and B are organic groups to form an ester, an amide, an anhydride, or an O-acylhydroxylamine, (2) a peroxide, (3) a solvent, and (4) rubrene as a fluorescer.

3,701,739
METHOD FOR FORMING MIXED OXIDE HETEROGENOUS CATALYSTS

Bennett Bovarnick, Newton Centre, Robert E, Eberts, Framingham, and Ravindra Nadkarni, Cambridge, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,008
Int. Cl. B01j *11/06, 11/22*
U.S. Cl. 252—454 18 Claims

A heterogenous catalyst is formed by decomposing and partially dehydrating an ammoniacal solution of a mixture of the carbonate or hydroxide of at least one metal which is reducible in hydrogen and the carbonate or hydroxide of at least one metal which is non reducible in hydrogen in a fluid bed. Residual volatiles are then removed from the resulting fine particle agglomerates of metal oxides under conditions which prevent grain growth. After pelleting the composite material is treated with hydrogen at relatively low temperatures to reduce one or more of the oxides to its metal which remains dispersed in the remaining oxide or oxides. The catalyst thus formed has a large effective surface area and remains effective over a prolonged period of time.

3,701,740
PROCESS FOR MAKING POLY(ARYLENE-VINYLENES)

James V. Crivello, Mechanicville, N.Y., assignor to General Electric Company

No Drawing. Filed Nov. 4, 1971, Ser. No. 195,833
Int. Cl. C08g *33/00*
U.S. Cl. 260—2 H 9 Claims

Alkali metal adducts of hexa-substituted phosphoric triamides are improved dehydrohalogenating agents for making bright yellow fluorescent polymers by dehydrohalogenating, with a dehydrohalogenating agent under dehydrohalogenating conditions, a compound having at least two halomethyl groups substituted on an aryl nucleus in positions relative to each other so that the double bonds of the vinylene groups created by said dehydrohalogenating reaction are conjugated with one another through the double bonds of said aryl nucleus.

3,701,741
PURIFICATION OF IMPURE SCRAP POLY(ETHYLENE TEREPHTHALATE)

Max F. Meyer, Jr., Robert L. Combs, and Willis C. Wooten, Jr., Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Feb. 1, 1971, Ser. No. 111,651
Int. Cl. C08g *53/22*
U.S. Cl. 260—2.3 10 Claims

A process for the recovery of substantially pure poly(ethylene terephthalate) from scrap poly(ethylene terephthalate) contaminated with impurities which comprises dissolving the contaminated poly(ethylene terephthalate) at elevated temperatures and under superatmospheric pressure in a volatile solvent in which said poly(ethylene terephthalate) is insoluble at ambient temperatures but soluble at elevated temperatures, said solvent having an atmospheric boiling point of about —104° C. to 100° C. and being aliphatic alcohols or mixtures thereof; filtering off impurities; precipitating finely divided poly(ethylene terephthalate) by slowly cooling the resulting solution while maintaining the solution under superatmospheric pressure and at a substantially constant volume; and recovering said substantially pure poly(ethylene terephthalate) by a second filtration step.

3,701,742
VINYL CHLORIDE POLYMERS AND METHOD OF PREPARING SAME

Dean E. Richardson, La Marque, Adolph A. Peterson III, Dickinson, and Harold P. Brady, Jr., Houston, Tex., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Oct. 29, 1970, Ser. No. 85,262
Int. Cl. C08f *11/09*
U.S. Cl. 260—17 R 7 Claims

Vinyl chloride polymers having enhanced porosity and lower fisheye values have been prepared by aqueous suspension polymerization using a combination of hydroxypropyl methyl cellulose and hydroxyethyl cellulose as suspending agents.

3,701,743
MODIFIED UREA-FORMALDEHYDE PLYWOOD ADHESIVE

Frederic Horowitz, Portland, and Joseph B. Dede, Jr., North Bend, Oreg., assignors to Georgia-Pacific Corporation, Portland, Oreg.

No Drawing. Original application Apr. 9, 1969, Ser. No. 814,827. Divided and this application Dec. 31, 1970, Ser. No. 103,292
Int. Cl. B32b *27/43;* C08g *51/18*
U.S. Cl. 161—262 8 Claims

A plywood adhesive especially useful for bonding hardwood overlays to softwood plywood cores which comprises a urea-formaldehyde adhesive modified with a phenol-formaldehyde resin.

3,701,744
POLYMERIZATION OF UNSATURATED COMPOUNDS WITH SALTS OF ARYLALIPHATIC CARBOXYLIC ACIDS

Layton Frederick Kinney, Villa Park, Ill., assignor to Armour Industrial Chemical Company

No Drawing. Filed Nov. 14, 1967, Ser. No. 682,996
Int. Cl. C08d *1/09;* C08f *1/13*
U.S. Cl. 260—23.7 7 Claims

An improved method for the production of linear polymers by polymerization of ethylenically unsaturated compounds dispersed in an aqueous medium which comprises using an alkali metal salt of an arylaliphatic carboxylic acid as emulsifying agent.

3,701,745
PROCESS FOR PREPARING A COATING COMPOSITION OF COPOLYMERIC VINYLIDENE CHLORIDE

Paul Herman Settlage, Richmond, Va., and Roger Lea Thornton, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation of abandoned application Ser. No. 747,445, July 25, 1968. This application Dec. 23, 1970, Ser. No. 101,169
Int. Cl. C08f *45/52, 45/24*
U.S. Cl. 260—28.5 R 2 Claims

A coating composition comprising a copolymer of vinylidene chloride is provided wherein the copolymer is of between about 60 parts and about 95 parts by weight of vinylidene chloride and includes a non-ionic surfactant especially adapted for coating film structures of organic thermoplastic polymeric material. A process for preparing said compositions characterized by continuous addition of monomeric materials into a polymerization solution containing a reduction-oxidation initiator and a non-ionic surfactant also is provided.

3,701,746

PLASTICIZED NONAQUEOUS METHYL METHACRYLATE POLYMER DISPERSION COATING COMPOSITIONS

William R. Johnson, Blauvelt, N.Y., William R. Sevy, Chattanooga, Tenn., and James E. Weigel, White Plains, and Robert A. Taller, Ossining, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Apr. 10, 1970, Ser. No. 27,377
Int. Cl. C08f *45/40, 47/20*
U.S. Cl. 260—31.6 11 Claims

A liquid coating composition producible into films of improved physical properties when applied to a substrate and dried, comprising a dispersion of a methyl methacrylate polymer or copolymer material in an organic liquid, a plasticizer and a high boiling solvent combinable with the plasticizer, wherein the copolymer material further comprises a polymer formed from an ethylenically unsaturated monomer, wherein the organic liquid is one in which particles of the polymer or copolymer are substantially insoluble, wherein the plasticizer is an ester plasticizer characterized by a certain critical volatility, and a certain critical solvency predictable in terms of the ratio of the polar to nonpolar solubility parameters, and wherein the high boiling solvent has a certain critical solvency, preferably the same critical solvency as the ester plasticizer. A metallic pigment may be added to the coating composition to produce a film of excellent metallic glamour.

3,701,747

PROCESS FOR MAKING A DISPERSION OF POLYMER PARTICLES IN AN ORGANIC LIQUID

Desmond Wilfred John Osmond, Windsor, Ian Wagstaff, Datchet, and Frederick Andrew Waite, Slough, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation-in-part of application Ser. No. 682,615, Nov. 13, 1967. This application Sept. 4, 1968, Ser. No. 757,480
Claims priority, application Great Britain, Nov. 14, 1966, 50,915/66
Int. Cl. C08f *47/20*; C08g *53/18*; C08j *1/46*
U.S. Cl. 260—33.6 6 Claims

Preformed polymer particles are dispersed in organic liquids such as hydrocarbons by use of a stabiliser comprising one component solvatable by the organic liquid and another component which is relatively non-solvatable and is, in bulk, a plastic solid or viscous liquid under the conditions of the dispersion, this other component serving to attach the stabiliser to the dispersed polymer particles.

3,701,748

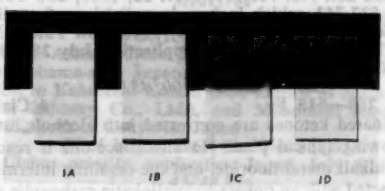
UNSATURATED POLYESTER RESINOUS COMPOSITIONS

Charles Henry Kroekel, Churchville, Pa., assignor to Rohm & Haas Company, Philadelphia, Pa.

Filed July 20, 1966, Ser. No. 566,580
Int. Cl. C08f *43/08, 45/10*
U.S. Cl. 260—40 7 Claims

This invention provides a liquid, polymerizable composition of matter, suitable for molding glass fibrous reinforced articles with exceptionally smooth surfaces, said composition being curable under heat and pressure to form a rigid, cured product which is characterized by an optically heterogeneous appearance. The composition comprises an α,β-ethylenically unsaturated polymerizable polyester having a molecular weight per double bond factor of 150 to 186, a monomer containing a

group copolymerizable with the unsaturated polyester, and a thermoplastic polymer which is soluble in the monomer but which, when present during the copolymeri-



zation of the unsaturated polyester and the monomer, yields an optically heterogeneous cured composition.

3,701,749

POLYVINYLIDENE FLUORIDE-FLAVANTHRON COMPOSITION

Masahiro Segawa and Yukichika Kawakami, Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Apr. 2, 1971, Ser. No. 130,673
Claims priority, application Japan, Apr. 7, 1970, 45/29,515
Int. Cl. C08f *29/16*
U.S. Cl. 260—41 C 3 Claims

Polyvinylidene fluoride composition of improved crystallinity and impact strength containing flavanthron as a crystal nucleating agent.

3,701,750

REINFORCED POLYETHYLENE

Renato C. Pomatti, Beacon, N.Y., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed Dec. 10, 1969, Ser. No. 883,995
Int. Cl. C08f *45/10*
U.S. Cl. 260—41 7 Claims

A solid polyethylene composition reinforced with between about 5 and 35 wt. percent glass fibers based on said composition, said fibers presoaked in a solution selected from the group consisting of aqueous mineral acid, aqueous alkali metal hydroxide and water.

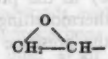
3,701,751

FIBER REINFORCED MODIFIED POLYOLEFIN COMPOSITIONS

Charles H. Schramm, Ridgewood, Albert Schrage, East Orange, and Philip D. Readio, Rockaway, N.J., assignors to Dart Industries, Inc., Los Angeles, Calif.

No Drawing. Filed Oct. 16, 1970, Ser. No. 81,527
Int. Cl. C08f *45/10*; C08k *1/14*
U.S. Cl. 260—41 A 10 Claims

Enhanced physical properties are obtained with the fiber reinforced modified polyolefin compositions. The modified polyolefin compositions comprise the reaction product of a polyolefin and a polymerizable compound containing a terminal



group and a terminal vinyl group.

3,701,752

PREPARATION OF FLUORINATED ALCOHOLS

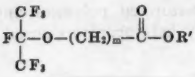
Allen G. Pittman, El Cerrito, and William L. Wasley, Berkeley, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Application July 14, 1969, Ser. No. 841,616, now Patent No. 3,674,820, which is a division of application Ser. No. 703,199, Nov. 22, 1967, now Patent No. 3,527,742, which in turn is a division of application Ser. No. 477,331, Aug. 4, 1965, now Patent No. 3,424,785. Divided and this application July 28, 1971, Ser. No. 166,964

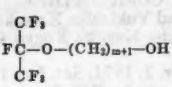
Int. Cl. C07c *43/00, 43/12*

U.S. Cl. 260—615 F 4 Claims

Fluorinated ketones are converted into alcohols, using the following typical plan: Hexafluoroacetone is reacted with an alkali metal fluoride, and the resulting intermediate is reacted wtih an omega-halo-aliphatic carboxylic acid ester, yielding an ester of the structure—



wherein *m* is 1–20, R' is a hydrocarbon group. Reduction of this ester yields an alcohol of the structure—



3,701,753

SOLUTIONS OF ROOM TEMPERATURE VULCANIZABLE SILICONE RUBBER COMPOSITIONS

Harvey P. Shaw, Troy, N.Y., assignor to General Electric Company

No Drawing. Filed Sept. 28, 1970, Ser. No. 76,266

Int. Cl. C08b *23/00*

U.S. Cl. 260—9 R 8 Claims

A room temperature vulcanizable solution which is applied to surfaces and cured in situ to form a tough film over said surface comprising a silicon rubber composition containing (i) a silanol-terminated diorganopolysiloxane base polymer with a viscosity in the range of 1,000 to 100,000 centipoises at 25° C. and (ii) an organotriacyloxysilane. The silicone rubber composition is dissolved in an organic solvent, preferably cyclohexane, and applied to said surface.

3,701,754

PREPARATION OF THERMOSETTING COMPOSITIONS AND THERMOSET RESINS FROM POLYMERS OF N - 3 - OXOHYDROCARBON-SUBSTITUTED ACRYLAMIDES

Eugene Richard Farone, Mentor-on-the-Lake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Continuation of abandoned application Ser. No. 817,577, Apr. 18, 1969. This application Nov. 30, 1970, Ser. No. 93,818

Int. Cl. C08g *1/18, 3/00*

U.S. Cl. 260—64 14 Claims

Thermosetting polymers are prepared by the reaction of an aldehyde with a homopolymer or interpolymer of an N-3-oxohydrocarbon-substituted acrylamide (such as diacetone acrylamide) in the presence of a strongly alkaline catalyst. The thermosetting reaction is effected by heating, usually in the presence of an alkaline compound. The thermoset resins are useful as surface coatings, especially for metal surfaces.

3,701,755

PRODUCTION OF ELASTOMERS

Misao Sumoto, Hideki Komagata, Hiroshi Matsumoto, and Hironobu Furusawa, Ootsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Dec. 3, 1969, Ser. No. 881,906

Claims priority, application Japan, Dec. 4, 1968, 43/89,224; June 4, 1969, 44/44,170

Int. Cl. C08g *17/08*

U.S. Cl. 260—75 R 3 Claims

The present invention relates to a process for producing elastomeric polyethylene terephthalate-poly(tetramethylene oxide) glycol block copolymers which comprises reacting poly (tetramethylene oxide) glycol, average molecular weight 1800 to 2500, with terephthalic acid (3 to 5 parts per part of glycol). The reaction is carried out until the specific viscosity $\eta_{sp./c.}$ of the copolymer is equal to or greater than $0.05x-1.75$ wherein x is the glycol unit in the copolymer.

3,701,756

CATALYTIC PREPARATION OF POLYIMIDES FROM POLYISOCYANATES

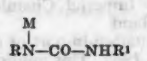
Peter S. Carleton, Branford, William J. Farrissey, Jr., North Branford, and James S. Rose, Guilford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Jan. 17, 1969, Ser. No. 792,144

Int. Cl. C08g *20/32*

U.S. Cl. 260—78 TF 7 Claims

The use of certain catalysts gives markedly improved reaction rates in the formation of imides (mono- and poly-) by reaction of an isocyanate and an intramolecular anhydride. The catalysts are hydroxides of Formula MOH and ureas of formula



(R and R^1 are hydrocarbyl) wherein M in each case is hydrogen or is such that the hydroxide MOH forms a urethane with isocyanate, which urethane will decompose with elimination of carbon dioxide at a temperature not greater than about 150° C. A preferred catalyst is phenylmercuric hydroxide. Tertiary amines can be employed as cocatalysts. The catalytic process can be applied to the preparation of both cellular and non-cellular polyimides by reaction of polyisocyanates and polycarboxylic anhydrides. Optionally a solvent is employed in the reaction.

3,701,757

ORTHOESTER CATALYSIS OF POLYESTER POLYCONDENSATION

Stanley David Lazarus, Petersburg, and Robert Alden Lofquist, Richmond, Va., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Feb. 1, 1971, Ser. No. 111,730

Int. Cl. C08g *17/015*

U.S. Cl. 260—75 R 16 Claims

The preparation of linear high-molecular weight, film and fiber forming polyalkylene terephthalates, comprising reacting either by direct esterification or ester interchange an organic dicarboxylic acid and/or the lower alkyl ester thereof with a polyol having 2 to 10 carbon atoms per molecule to obtain the corresponding diglycol ester intermediate and then condensing said intermediate in the presence of an effective amount of a condensation accelerator which is an orthoester of an organic acid which produces volatile alcohol and acid upon reaction with water.

3,701,758

PRESSURE-SENSITIVE ADHESIVES OF CYANOACRYLATE POLYMERS

Rudolf Maska, Pittsburgh, Pa., assignor to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 657,777, Aug. 2, 1967. This application Aug. 28, 1969, Ser. No. 853,979

Int. Cl. C08f *15/38, 15/40*

U.S. Cl. 260—78.5 R 8 Claims

Acrylic interpolymers which are useful as pressure-sensitive adhesives having improved properties, especially after exposure to elevated temperatures, are obtained by including in the interpolymer a cyano-substituted alkyl ester of an unsaturated carboxylic acid. 2-cyanoethyl acrylate and 2-cyanoethyl methacrylate are the preferred cyano-substituted esters. The interpolymer also includes alkyl acrylates and/or methacrylates, and preferably contains carboxylic acid units. These adhesives have improved tack, adhesion and cohesive strength as compared to corresponding adhesives without the cyano-substituted ester component, the improvement being particularly pronounced after exposure of the adhesive to elevated temperatures.

3,701,759

CERTAIN GERANYL PHENYL ETHERS AND THEIR EPOXIDES AND THEIR USE IN CONTROLLING INSECTS

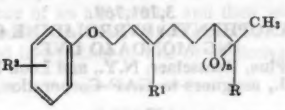
Hwalin Lee, San Francisco, Ferenc M. Pallos, Pleasant Hill, and Julius J. Menn, Saratoga, Calif., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 856,140, Sept. 8, 1969, which is a continuation-in-part of application Ser. No. 815,229, Apr. 10, 1969. This application Mar. 29, 1971, Ser. No. 129,192

Int. Cl. C07d *1/00*

U.S. Cl. 260—240 H 2 Claims

Compounds having the formula



in which R and R^1 are independently methyl or ethyl; *n* is the integer zero or one; R^2 is certain heterocyclic radicals; the use of these compounds in controlling insects.

3,701,760

HYDROCARBON DAC-B RESIN PREPARED BY POLYMERIZING DAC-B USING TWO POLYMERIZATION TEMPERATURE RANGES FOLLOWED BY HYDROGENATION

Hugh J. Hagemeyer, Jr., Harold E. Hogan, and Sam H. Johnson, Jr., Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 27, 1970, Ser. No. 67,333

Int. Cl. C08f *15/42*

U.S. Cl. 260—82 4 Claims

This invention provides a two-stage improved process for the preparation of light-color, high softening point hydrocarbon resins which comprises polymerizing a mixed hydrocarbon fraction using aluminum chloride as a catalyst in a two-stage reaction system. The temperature in the first stage is lower than that in the second stage to obtain a solution containing a high softening point crude resin in good yields. The chlorides are removed from the resin solution by methanol extraction or high temperature lime treatment followed by low pressure hydrogenation and/or alumina treatment followed by high pressure-high temperature hydrogenation to remove color and reduce unsaturation and thereafter stripping the resin solution to obtain a low color, color stable, melt stable, high softening point hydrocarbon resin in good yields.

3,701,761

TEMPERATURE CONTROL IN SUSPENSION POLYMERISATION

Yoshiro Ashina, Iwao Oshima, and Kazunori Sekine, Yokohama-shi, Japan, assignors to Nitto Kagaku Kogyo Kabushiki Kaisha (also known as Nitto Chemical Industry Co., Ltd.), and Mitsubishi Rayon Co., Ltd., both of Tokyo-to, Japan

Filed July 1, 1969, Ser. No. 838,085

Claims priority, application Japan, July 3, 1968, 43/45,876

Int. Cl. C08f *15/04, 15/22*

U.S. Cl. 260—85.5 R 5 Claims

The polymerization temperature in suspension polymerization of a monomer mixture comprising styrene monomer and acrylonitrile monomer is so controlled that it does not exceed a predetermined level until a gel effect begins to develop and is thereafter left to rise, whereby a homogeneous copolymer is obtainable in a short polymerisation time.

3,701,762

POLYALKENYLARENE COMPOSITIONS

Howard V. Holler, Oakland, Calif., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 888,962, Dec. 29, 1969. This application July 19, 1971, Ser. No. 164,119

Int. Cl. C08f *7/02*

U.S. Cl. 260—88.2 C 10 Claims

Compositions are disclosed comprising one or more polyalkenylarenes having at least three nuclear substituents each having at least three carbon atoms, and 0.01 to 10% by weight of certain acidic curing agents, which compositions may be cured at temperatures above 80° C. to useful castings, pottings, and laminates.

3,701,763

PROCESS FOR POLYMERIZATION OF OLEFINS AND CATALYSTS THEREFOR

Shigeru Wada, Otake, Hidesaburo Oi, Wagi, and Norio Matsuzawa and Hiroshi Nishimura, Otake, and Juntaro Sasaki, Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

No Drawing. Filed Oct. 20, 1970, Ser. No. 82,540

Claims priority, application Japan, Oct. 20, 1969, 44/83,232, 44/83,233; Oct. 24, 1969, 44/84,625; Nov. 1, 1969, 44/87,255, 44/87,256, 44/87,257; June 15, 1970, 45/51,054

Int. Cl. C08f *1/56, 3/10*

U.S. Cl. 260—88.2 R 4 Claims

Stereospecific polymers of olefins are produced with little formation of amorphous polymers by contacting olefins with a catalyst composed of (A) a titanium trichloride composition obtained by pulverizing titanium trichloride in the presence of an auxiliary component selected from (1) organic oxygen-containing compounds such as saturated aliphatic monoethers, (2) organic nitrogen-containing compounds such as saturated aliphatic primary amines, (3) organic phosphorus-containing compounds such as trialkyl phosphines, (4) sulfur containing compounds such as carbon disulfide, (5) organic silicon-containing compounds such as triaryl silicon isocyanates, and (6) hydrocarbons such as saturated aliphatic hydrocarbons until α- or γ-crystal type of said titanium trichloride cannot be identified in the X-ray diffraction pattern and extracting the resulting titanium

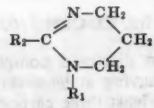
trichloride composition with a solvent such as hydrocarbons, halogenated hydrocarbons or carbon disulfide or mixtures of these with said components (1), (2) and/or (5); and (B) an organoaluminum compound.

3,701,764
PROCESS FOR THE FRACTIONATION OF POLYMERS
Bartholomew Hargitay, White Plains, N.Y., assignor to Union Carbide Corporation
Filed Aug. 26, 1968, Ser. No. 755,087
Int. Cl. C08f *1/94*
U.S. Cl. 260—88.3 **2 Claims**

Separation of the highest molecular weight fraction from polymers can be achieved by the selective formation in the homogeneous phase of soluble molecular complexes of the highest molecular weight fraction with specific other macromolecules and thereafter isolating the complexes from the polymers.

3,701,765
ANTISTATIC MOLDING COMPOSITIONS
Karl-Heinz Magosch and Konrad Rombusch, Marl, and Ursula Eichers, Recklinghausen, Germany, assignors to Chemische Werke Huls A.G., Marl, Germany
No Drawing. Filed Oct. 28, 1970, Ser. No. 84,886
Claims priority, application Germany, Oct. 29, 1969, P 19 54 291.7; Jan. 19, 1970, P 20 02 095.5
Int. Cl. C08f *29/02, 29/04*
U.S. Cl. 260—93.7 **23 Claims**

Antistatic polyolefin molding compositions and articles containing 0.01–5.0% by weight of an antistat of the formula:



wherein R_1 is hydrogen, alkyl or alkenyl of 1–5 carbon atoms, or a group of the formula $(C_xH_{2x}O)_nH$ in which x is 2 or 3 and n is 1–10, and wherein R_2 is straight chain or branched alkyl or alkenyl of 5–25 carbon atoms, inclusive.

3,701,766
PROCESS FOR THE POLYMERIZATION OF α-OLEFINS
André Delbouille and Henri Toussaint, Brussels, Belgium, assignors to Solvay & Cie, Brussels, Belgium
No Drawing. Original application Aug. 29, 1968, Ser. No. 756,330, now Patent No. 3,594,330, dated July 20, 1971. Divided and this application Mar. 17, 1971, Ser. No. 125,327
Claims priority, application France, Aug. 31, 1967, 119,563
Int. Cl. C08f *1/56, 3/10*
U.S. Cl. 260—93.7 **9 Claims**

Polymerization of α-olefins is carried out in the presence of a solid catalyst which is composed of an organic compound of a metal of Groups I to III of the Periodic Table and a crystalline halide of a reduced metal of Groups IV*b*, V*b* or VI*b* of the Periodic Table deposited on a pulverulent support. The reduced metal halide is obtained by reducing a halide of the metal at its maximum valence with an organometallic compound at a temperature below 0° C. and in the absence of liquid diluent wherein the halide of the metal at its maximum valence or the organometallic compound has been absorbed on a solid pulverulent support prior to the reduction. Catalysts prepared in this manner have a high stereospecificity and catalytic activity, and polymerization carried out in the presence thereof yields highly isotactic crystalline polymer.

3,701,767
PEROXIDE BLEACHING OF EPOXIDIZED FATTY ACID ESTERS
William H. French, St. Paul, Minn., and Brian M. Rushton, Williamsville, N.Y., assignors to Ashland Oil, Inc., Houston, Tex.
No Drawing. Filed Feb. 2, 1971, Ser. No. 112,086
Int. Cl. C09f *1/02*
U.S. Cl. 260—97.5 **14 Claims**

A process of bleaching epoxidized fatty acid esters by treating the esters concurrently with an alkaline material and with hydrogen peroxide. Examples of some suitable epoxidized fatty acid esters are epoxidized soybean oil and epoxidized octyl tallate. Sodium hydroxide is the preferred alkaline material.

3,701,768
SIMPLE PROTEIN AND METHOD OF DERIVING IT FROM LIVER USING AN AQUEOUS SOLUTION OF A DIVALENT METAL ION
Jack G. Fortini, Oakland, Walter A. Blair, Palo Alto, and Gerold M. Grodsky, San Francisco, Calif., assignors to Blair/Johnson, Inc., Palo Alto, Calif.
Continuation-in-part of application Ser. No. 763,292, Sept. 27, 1968, which is a continuation-in-part of abandoned application Ser. No. 307,404, Sept. 9, 1963, which in turn is a continuation-in-part of abandoned application Ser. No. 5,376, Jan. 29, 1960. This application Dec. 27, 1971, Ser. No. 212,341
Int. Cl. C07g *7/00*
U.S. Cl. 260—112 R **12 Claims**

A new simple protein of approximately 25,000 molecular weight exhibiting biological activity and method of deriving it from liver. The protein facilitates glucose uptake in muscle as well as glycogen deposition, leading to utility in the treatment of uremia and shock in animals.

3,701,769
N-(p-AMINOPHENYL) PYRROLIDINE CONTAINING MONOAZO DYES
Arnold F. Plue, Rensselaer, N.Y., and Leon Katz, Springfield, N.J., assignors to GAF Corporation, New York, N.Y.
No Drawing. Filed May 1, 1970, Ser. No. 33,920
Int. Cl. C09b *29/00*
U.S. Cl. 260—152 **3 Claims**

Process for the preparation of N-(p-aminophenyl) pyrrolidines by coupling a diazotized aminobenzenesulfo acid with the pyrrolidino benzene corresponding to the desired product, and reducing the resulting azo compound to the corresponding amino derivatives. The intermediate azo compounds are useful as dyestuffs for polyamide fiber, and the N-(p-aminophenyl) pyrrolidines yield, on diazotization of the p-amino groups and conversion of the resulting diazonium compound to complex diazonium double salts, valuable sensitizers for light-sensitive diazotype copying materials.

3,701,770
9,11-CYCLIC BORONATE ESTERS OF THE 6,9-HEMIKETAL OF ERYTHROMYCIN A
Peter Hadley Jones, Lake Forest, and Kishori S. Iyer, Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.
No Drawing. Filed Feb. 1, 1971, Ser. No. 111,733
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 E **10 Claims**

The 9,11-phenyl; halo, nitro, and lower alkyl substituted phenyl; lower alkyl; fatty alkyl; and cyclyohexyl cyclic boronate ester of the 6,9-hemiketal of erythromycin A have useful antibiotic activity.

3,701,771

N-(2,4,6-TRIIODOBENZOYL)-SUGAR AMINES

Torsten H. O. Almen, Johan Haavaldsen, and Vegard Nordal, Oslo, Norway, assignors to Nyegaard & Co. A/S

No Drawing. Filed June 26, 1970, Ser. No. 50,075
Claims priority, application Great Britain, June 27, 1969, 32,699/69, Feb. 9, 1970, 6,130/70
Int. Cl. C07c *95/04*
U.S. Cl. 260—211 R 7 Claims

This invention relates to novel X-ray contrast agents particularly for use in the cerebrospinal cavities, comprising non-ionic alkanols carrying at least one N-bonded secondary or tertiary amide group and having at least two hydroxyl groups and at least one iodine atom in the molecule. Particularly useful compounds include the N-hydroxyalkyl iodoalkane sulphonamides having at least two hydroxyl groups, tri- and tetra-iodobenzene carrying carbamoyl, acylamino and/or acylaminomethyl substituents and having at least two hydroxyl groups in the molecule and at least one N-hydroxyalkyl group. Particularly preferred compounds comprise 2,4,6-triiodobenzamides which may be 3- and/or 5-substituted with a variety of groups. The compounds all show markedly low toxicities and a number show very high levels of water solubility.

3,701,772

PRODUCTION OF NUCLEOTIDE ANHYDRIDES

Kiminori Tamura, Manami Morozumi, Yutaka Noda, Morio Suzuki, and Hiroshi Yoshino, Choshi-shi, Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Araoi, Choshi-shi, Chiba-ken, Japan

No Drawing. Filed June 1, 1970, Ser. No. 42,579
Claims priority, application Japan, June 12, 1969, 44/45,786
Int. Cl. C07d *51/50*
U.S. Cl. 260—211.5 R 4 Claims

Nucleotide anhydrides can be synthesized, in each case, by a single-step process by causing a nucleoside-5′-monophosphate and diphenyl phosphorochloridate or tetraphenyl pyrophosphate to react in a suitable solvent and in the presence of an alkylamine and then adding to the resulting process materials alkylammonium salt of an acid dissolved in pyridine or one of its derivatives.

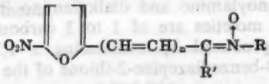
3,701,773

5-NITROFURYL NITRONES

Shinsaku Minami, Yamatokouriyama-shi, Jun-ichi Matsumoto, Osaka, Masanao Shimizu, Kobe, and Yoshiyuki Takase, Amagasaki-shi, Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

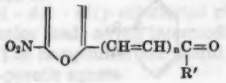
No Drawing. Continuation-in-part of application Ser. No. 592,265, Nov. 7, 1966. This application July 23, 1968, Ser. No. 746,749
Claims priority, application Japan, Nov. 6, 1960, 40/68,196; July 27, 1967, 42/48,362
Int. Cl. C07d *5/30*
U.S. Cl. 260—240 A 42 Claims

Nitrone derivatives having anti-microbial activity comprising compounds of the formula

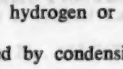


wherein *n* is 0 or 1; R is a substituted or unsubstituted alkyl radical having 1 to 6 carbon atoms. a substituted or unsubstituted phenyl radical, or a substituted or unsubstituted heterocyclic radical; and R′ is hydrogen or an alkyl radical of 1 to 4 carbon atoms.

Such nitrone derivatives are prepared by condensing carbonyl compounds of the formula



with an N-substituted hydroxylamine of the formula



wherein *n*, R, and R′ have the meaning set forth above.

3,701,774

5,5αβ,13,13αβ-TETRAHYDRO-5β,13β - DIHYDROXY-8H,16H-7α,15α - EPIDITHIO-7H-15H-BISOXEPINO-[3′4′:4,5]PYRROLO[1,2-a:1′,2′-d]-PYRAZINE - 7,15-DIONE, DIACETATE AND PRODUCTION THEREOF USING *ASPERGILLUS TERREUS*

Philip Andrew Miller, West Nyack, and Patrick Willoughby Trown, Suffern, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed July 2, 1968, Ser. No. 741,849
Int. Cl. C07d *93/20;* A61l *13/00*
U.S. Cl. 260—243 R 2 Claims

This disclosure describes 5,5αβ,13,13αβ-tetrahydro-5β, 13β - dihydroxy - 8H,16H-7α,15α-epidithio-7H,15H-bisoxepino[3′,4′:4,5]pyrrolo[1,2-a:1′,2′-d]pyrazine - 7,15 - dione, diacetate, a new compound useful as an antiviral agent.

3,701,775

ESTERS OF MANDELOYLAMINOCEPHALOSPORANIC ACIDS

David A. Berges, Plymouth Meeting, George L. Dunn, Wayne, and John R. E. Hoover, Glenside, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed Nov. 25, 1970, Ser. No. 92,860
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 22 Claims

Esters of mandelamidocephalosporanic acids having antibacterial activity are prepared by condensing the mandelamidocephalosporin with a carboxylic acid. Preferred compounds include those where the carboxylic acid is an amino acid.

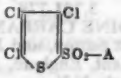
3,701,776

SULFONES DERIVED FROM TRICHLOROTHIOPHENE

Daniel Pillon and Van Quy Trinh, Lyon, France, assignors to PEPRO, Société pour le Developpement et la Vente de Specialites Chimiquos, Lyon, France

No Drawing. Filed Dec. 6, 1968, Ser. No. 781,968
Claims priority, application France, Dec. 8, 1967, 49,418
Int. Cl. C07d *87/46, 29/34, 63/14*
U.S. Cl. 260—247.1 1 Claim

Sulfones derived from trichlorothiophene having the general formula



and the utilization thereof as a parasiticide, insecticide, fungicide, nematicide and herbicide.

3,701,777

SUBSTITUTED [3-(4-PHENYL-1-PIPERAZINYL) PROPOXY OR PROPYL THIO] ANILINES

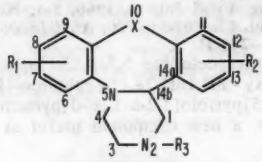
Albrecht Edenhofer, Riehen, and Hans Spiegelberg, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Dec. 4, 1969, Ser. No. 882,297
Claims priority, application Switzerland, Dec. 24, 1968, 19,269/68
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 PH 16 Claims

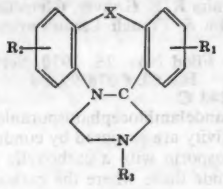
Substituted [3-(4-phenyl-1-piperazinyl)-propoxy or propyl-thio]anilines prepared, inter alia, by the reaction of the correspondingly substituted propoxy or propyl-thio anilines and N-phenyl-piperazines, are described. The end

products, i.e., the substituted [3-(4-phenyl-1-piperazinyl)-propoxy or propyl-thio]anilines are useful as hypotensive agents.

3,701,778
DIBENZO-PYRAZINO-AZEPINES
Willem Jacob van der Burg, Oss, Netherlands, assignor to Organon Inc., West Orange, N.J.
Filed June 26, 1968, Ser. No. 740,319
Claims priority, application Netherlands, July 7, 1967, 6709520
Int. Cl. C07d *51/72*
U.S. Cl. 260—268 PC **7 Claims**



The present invention relates to new piperazine derivatives of the general formula:



in which X is sulfur, oxygen, or N-(C_1-C_6-alkyl); R_1 and R_2 are hydrogen, halogen, acyloxy, alkyl, alkoxy or trifluoromethyl; R_3 is hydrogen, alkyl, phenylalkyl aminoethyl or aminopropyl each of which latter may be substituted at N by alkyl or alkyl with a 5- or 6-membered nitrogen containing ring; and the acid addition salts, quarternary ammonium derivatives, nitrogen oxides, or sulfur oxides thereof. The above compounds exert antihistaminic, antiserotinic, antiinflammatory and cardiovascular activities and the intermediate products exert sedative, tranquilizing and anti-depressive activities.

3,701,779
PYRIDINE CARBAMATES
Cyril Donninger, East Sutton, and John A. Schofield and John E. Hawes, Kent, England, assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed Nov. 3, 1970, Ser. No. 86,635
Claims priority, application Great Britain, Nov. 7, 1969, 54,653/69
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 G **4 Claims**

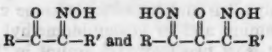
Certain novel 3-pyridyl carbamates, useful as insecticides, fungicides and nematocides.

3,701,780
IMIDAZO[1,2-a]PYRIDINES
Michael H. Fisher, Somerville, N.J., assignor to Merck & Co., Inc., Rahway, N.J.
No Drawing. Filed Sept. 18, 1970, Ser. No. 73,603
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 C **5 Claims**

New imidazo[1,2-a]pyridines substituted at the 2 and 6 positions as well as processes for preparing such compounds are disclosed. Also disclosed are methods of using the above compounds for the treatment of helmintic and fungal infections as well as compositions containing the above compounds as an active ingredient for use as anthelmintic and fungicidal agents.

3,701,781
ALPHA-OXIMINO KETONE ANTISKINNING AGENTS
Christian H. Stapfer, Newtown, Pa., assignor to Cincinnati Milacron Chemicals Inc., Reading, Ohio
No Drawing. Filed May 14, 1971, Ser. No. 143,640
Int. Cl. C09d *3/64*
U.S. Cl. 260—22 A **6 Claims**

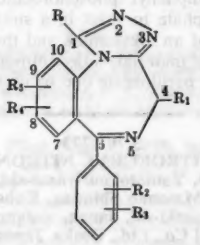
Compounds corresponding to the formulae:



wherein R and R′ are straight chain alkyls having 1 to 10 carbon atoms, which may have one methyl branch are superior antiskinning agents for phenol-modified unsaturated polyester resins.

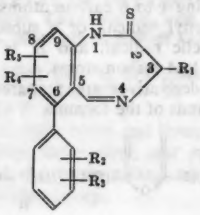
3,701,782
1-CARBOLOWER ALKOXY - 6 - PHENYL-4H-s-TRIAZOLO[1,4]BENZODIAZEPINE COMPOUNDS
Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Continuation-in-part of applications Ser. No. 807,933, Mar. 17, 1969, and Ser. No. 872,394, Oct. 29, 1969. This application Feb. 10, 1972, Ser. No. 225,302
Int. Cl. C07d *57/02*
U.S. Cl. 260—308 R **2 Claims**

6-phenyl-4H-s-triazolo[4,3-a][1,4]benzodiazepines of the Formula IV:

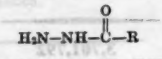


(IV)

wherein R is —COOR′ in which R′ is alkyl of 1 to 4 carbon atoms, inclusive; wherein R_1 is selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, inclusive; and wherein R_2, R_3, R_4, and R_5 are selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, halogen, nitro, cyano, trifluoromethyl, and alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkanoylamino and dialkylamino in which the carbon chain moieties are of 1 to 3 carbon atoms, inclusive, are produced by condensing a 1,3-dihydro-5-phenyl-2H-1,4-benzodiazepine-2-thione of the Formula I:



wherein R_1, R_2 R_3, R_4, and R_5 are defined as above with an organic acid hydrazide of the formula:



(II)

wherein R is defined as above.

The new products of Formula IV including their pharmacologically acceptable acid addition salts are useful as sedatives, tranquilizers and muscle relaxants in mammals and birds.

3,701,783

CERTAIN MERCAPTAN-FORMING COUPLERS

Charles R. Barr, John Williams, and Keith E. Whitmore, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of application Ser. No. 270,709, Apr. 4, 1963, now Patent No. 3,227,554, which is a continuation-in-part of applications Ser. No. 817,860, June 3, 1959, now abandoned, Ser. No. 126,783, June 29, 1961, now abandoned, and Ser. No. 244,774, Dec. 14, 1962, now Patent No. 3,227,551. This application June 14, 1965, Ser. No. 507,975

The portion of the term of the patent subsequent to Jan. 4, 1983, has been disclaimed

Int. Cl. C07d *55/56*

U.S. Cl. 260—308 D **14 Claims**

Certain mercaptan-forming or thioether couplers having the general formula COUP—S—R wherein COUP is a photographic coupler radical, S is a monothio radical attached to the coupling position of the coupler moiety and R is an organic radical.

3,701,784

1,2,4-4H-TRIAZOLE DERIVATIVES

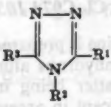
Michael C. Seidel, Levittown, William C. von Meyer, Willow Grove, and Stanley A. Greenfield, Hatboro, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 757,490, Sept. 4, 1968. This application July 3, 1969, Ser. No. 847,481

Int. Cl. C07d *55/06*

U.S. Cl. 260—308 R **4 Claims**

Substituted 1,2,4-4H-triazoles of the formula



or a tautomeric form thereof, are fungicides particularly useful for the control of rusts. Certain of these compounds are systemic in action, giving excellent control of cereal rusts, notably wheat rust, and are particularly effective as seed treatments.

3,701,785

1,3-DIMETHYL-4,5-DI(p-SUBSTITUTED PHENYL)-6H-PYRROLO[2,3-c]PYRAZOLES

Leo Ralph Swett, Waukegan, Ill., and Gerard Yvon Paris, Duvernay, Quebec, Canada, assignors to Abbott Laboratories, Chicago, Ill.

No Drawing. Filed Feb. 4, 1971, Ser. No. 112,767

Int. Cl. C07d *57/02*

U.S. Cl. 260—310 R **11 Claims**

1,3 - dimethyl - 4,6 - di(p-substituted phenyl)-6H-pyrrolo[2,3-c]pyrazoles and novel intermediates useful in their synthesis. The compounds are useful as anti-inflammatory and anti-pyretic agents.

3,701,786

DIBENZOFURANYL-AMINOALCOHOLS

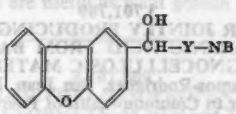
Harvey B. Hopps, West Allis, Wis., Dennis Jackman, University, Miss., and John H. Biel, Lake Bluff, Ill., assignors to Aldrich Chemical Company, Inc., Milwaukee, Wis.

No Drawing. Continuation-in-part of application Ser. No. 693,765, Dec. 27, 1967, which is a continuation-in-part of application Ser. No. 605,995, Dec. 30, 1966, which in turn is a continuation-in-part of application Ser. No. 462,066, June 7, 1965, all abandoned. This application May 19, 1971, Ser. No. 145,060

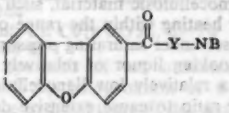
Int. Cl. C07d *99/04*

U.S. Cl. 260—293.58 **6 Claims**

Compounds of the formula



which possess hypotensive activity and are useful for treating hypertension in mammals and compounds of the formula



which are useful as intermediates in the preparation of the foregoing hypotensive agents and also in some cases exhibit hypotensive, sedative and muscle relaxant activity and processes for the preparation of the foregoing compounds. In the foregoing formulae, NB is a primary or secondary amino radical and Y is (lower)alkylene.

3,701,787

PREPARATION OF 5,6-DIHYDRO-5-HYDROXY-6-PROPENYL-2-PYRONE BY FERMENTATION AND DERIVATIVES THEREOF

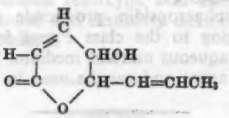
Ralph Henry Evans, Jr., Rivervale, N.J., and Chester Eric Holmlund, Silver Spring, Md., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Mar. 5, 1969, Ser. No. 804,686

Int. Cl. C07d *7/16*

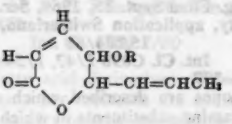
U.S. Cl. 260—343.5 **2 Claims**

The new compound of Formula I:



I

is prepared by the cultivation under controlled aerobic conditions of Nigrospora species Z1276. Compound I is acylated or etherified by chemical methods to yield the new esters or ethers of Formula II:



II

wherein R is an acyl radical such as acetyl, propionyl, p-nitrobenzoyl or succinoyl; or an ether radical such as a lower alkyl group, e.g., methyl, ethyl or propyl. All the compounds of this invention have antimicrobial activity. The compound of Formula I also has anti-inflammatory activity.

3,701,788
4-AZIDOSULFONYLPHTHALIC ANHYDRIDE
Adnan A. R. Sayigh, North Haven, and Henri Ulrich, North Branford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Filed May 10, 1971, Ser. No. 142,021
Int. Cl. C07c *63/14*
U.S. Cl. 260—346.3 **1 Claim**

4-azidosulfonylphthalic anhydride, obtained by reaction of sodium azide with 4-chlorosulfonylphthalic anhydride, is a novel compound useful, for example, in the preparation of radiation-sensitive polymers containing free carboxylic acid groups.

3,701,789
PROCESS FOR JOINTLY PRODUCING FURFURAL AND LEVULINIC ACID FROM BAGASSE AND OTHER LIGNOCELLULOSIC MATERIALS
Emiliano Ramos-Rodriguez, San Juan, Puerto Rico, assignor to Commonwealth of Puerto Rico
No Drawing. Filed Oct. 15, 1970, Ser. No. 81,154
Int. Cl. C07d *5/22*
U.S. Cl. 260—347.9 **8 Claims**

The production of furfural and levulinic acid in high yields from lignocellulosic material, such as bagasse, in a single cook by heating within the range of 160°–170° C. in a closed vessel under saturating pressure in an aqueous sulfuric acid cooking liquor of relatively low concentration and with a relatively low lignocellulosic material to cooking liquor ratio to cause extensive depolymerization of carbohydrate polymers and material formation of free pentoses and hexoses but little production of furfural or levulinic acid; isothermally distilling off at a temperature within this range the furfural formed and being formed, whereby a cooking liquor more concentrated with respect to sulfuric acid is produced; and heating the resulting reaction mixture to a temperature within the range of 185°–210° C., this temperature being maintained until optimum production of levulinic acid is achieved.

3,701,790
ANTIBIOTIC SPHAEROPSIDIN
John H. Coats and Milton E. Herr, Kalamazoo, and Ross R. Herr, Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Application Mar. 4, 1968, Ser. No. 709,901, now Patent No. 3,585,111, which is a continuation of application Ser. No. 506,853, Nov. 8, 1965. Divided and this application Mar. 3, 1971, Ser. No. 120,703
Int. Cl. C07d *1/18*
U.S. Cl. 260—348 C **1 Claim**

Antibiotic sphaeropsidin producible by culturing a fungus belonging to the class *Fungi imperfecti*, genus Phoma, in an aqueous nutrient medium. Sphaeropsidin is an antifungal agent and can be used in shoe uppers.

3,701,791
SALICYLOYLAMINO-ANTHRAQUINONE PIGMENTS
André Pugin, Riehen, Kurt Burdeska, and Ernst Model, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Filed Sept. 15, 1969, Ser. No. 858,126
Claims priority, application Switzerland, Oct. 11, 1968, 15,204/68
Int. Cl. C09b *1/42, 1/54*
U.S. Cl. 260—377 **7 Claims**

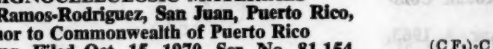
Anthraquinones are described which contain at least two salicyloylamino substituents in which substituents the benzene nucleus is substituted by

these anthraquinones are yellow to orange coloured pig-
R_1 being hydrogen, chlorine, bromine, the methyl, hydroxyl, methoxy, cyano or phenyl group or an alkylsulphonyl group having 1–4 carbon atoms, and
R_2 being hydrogen, chlorine, bromine or the methyl group;

ments of very good weather- and light-fastness and good fastness to migration and over-lacquering in synthetic plastic materials, as well as good colour strength.

3,701,792
1,4-BIS-(HEPTAFLUOROISOPROPOXY)-2,3-EPOXY-BUTANE
Allen G. Pittman, El Cerrito, and William L. Wasley, Berkeley, Calif., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Original application Dec. 22, 1969, Ser. No. 887,380. Divided and this application Feb. 17, 1971, Ser. No. 116,289
Int. Cl. C07d *1/18*
U.S. Cl. 260—348 R **1 Claim**

1,4-bis-(heptafluoroisopropoxy)-2-butene is oxidized to form the corresponding epoxide



$$(CF_3)_2CF-O-CH_2-\underset{\diagdown\,O\,\diagup}{CH}-CH-CH_2-O-CF(CF_3)_2$$

This epoxide can be converted into homo- or co-polymers which are useful for enhancing the repellency of fibrous substrates, e.g., fabrics made from natural or synthetic fibers.

3,701,793
METHOD OF CARRYING OUT LIQUID GAS REACTIONS
Hans Joachim Schmidt and Theodor Voeste, Frankfurt, Germany, assignors to Metallgesellschaft AG, Frankfurt am Main, Germany
Filed Dec. 31, 1969, Ser. No. 889,564
Int. Cl. C11c *3/12*
U.S. Cl. 260—409 **1 Claim**

A chemical-reactor method, wherein a liquid phase and a gas phase are passed upwardly through unpacked reaction chambers in a reactor column. The chambers are separated from one another by perforated plates with openings such that the linear gas velocity through the plates is 1 to 50 meters per second.

3,701,794
METHOD FOR PREPARING 10-CHLORO-PHENOXARSINE
Robert C. Wade, Ipswich, Mass., assignor to Ventron Corporation, Beverly, Mass.
No Drawing. Filed July 23, 1971, Ser. No. 165,749
Int. Cl. C07d *105/06*
U.S. Cl. 260—440 **2 Claims**

10-chlorophenoxarsine is prepared by reacting a mixture of arsenic trioxide, anhydrous aluminum trichloride and diphenyl ether, the latter being in an amount between about 50 and 200 percent in excess of the stoichiometric amount, while agitating and heating the reaction mixture at a temperature between about 175° C. and about 260° C. until hydrogen chloride ceases to be evolved. Thereafter, the insoluble by-products are removed and the 10-chlorophenoxarsine is isolated from the excess diphenyl ether.

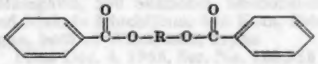
3,701,795
ALIPHATICALLY UNSATURATED AMIC ACID AND SILYLATED AMIC ACID
Fred F. Holub and Abe Berger, Schenectady, and Bruce B. Hardman and Michael P. Urkevich, Mechanicville, N.Y., assignors to General Electric Company
No Drawing. Filed Mar. 19, 1971, Ser. No. 126,291
Int. Cl. C07f *7/08*
U.S. Cl. 260—448.2 N **10 Claims**

Organopolysiloxanes are provided wherein the organopolysiloxanes have either a terminal aliphatically unsaturated amic acid or aliphatically unsaturated silylated amic acid group attached at one end and an alkenyl group attached at the other end, said amic acid or silylated amic

acid group being attached to silicon through carbon-silicon bonds. The novel compounds are used to form siloxanes useful as, for example, corrosion protective coatings for metal or ceramic surfaces.

3,701,796
STORAGE STABLE METHYLENEBIS (PHENYL ISOCYANATE) COMPOSITIONS
Nabil Najib Saaty, Palos Verdes Peninsula, and Richard Lee Jacobs, Hawthorne, Calif., assignors to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Filed Sept. 29, 1970, Ser. No. 76,611
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 SP **4 Claims**

Methylenebis (phenyl isocyanate) is converted to a form which is a storage stable liquid even on exposure to temperatures as low as −5° C. The storage stable composition comprises from about 85 to about 50 percent by weight of (a) the isocyanate obtained by heating methylenebis(phenyl isocyanate) with about 0.1 percent to about 3 percent by weight of a trihydrocarbyl phosphate at a temperature within the range of about 160° C. to about 250° C. and from 15 to about 50 percent by weight of (b) a dibenzoate of the formula

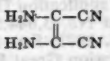


wherein R is the residue of an alkylene glycol or polyalkylene glycol.

The liquid isocyanate so obtained can be used for polyurethane syntheses for which the untreated methylenebis (phenyl isocyanate) is commonly employed.

3,701,797
PROCESS FOR PREPARING DIAMINOMALEONITRILE
Tomio Okada, Yamato, and Norio Asai, Sagamihara, Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan
No Drawing. Filed May 1, 1970, Ser. No. 33,870
Claims priority, application Japan, May 7, 1969, 44/35,044; Aug. 7, 1969, 44/62,691
Int. Cl. C07c *121/20*
U.S. Cl. 260—465.5 R **4 Claims**

Diaminomaleonitrile having the formula:



is prepared rapidly and in high yield by polymerization of hydrogen cyanide in the presence of a polar aprotic solvent and a basic material as a catalyst. Particularly, dimethylsulfoxide (DMSO) or dimethylformamide (DMF) is used as the solvent. Diaminomaleonitrile is useful as an intermediate for medicines or industrial chemicals.

3,701,798
SYNTHESIS OF UNSATURATED COMPOUNDS
Thomas Carter Snapp, Jr., Alden E. Blood, and Hugh John Hagemeyer, Jr., Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Original application Dec. 3, 1965, Ser. No. 511,327, now Patent No. 3,578,702. Divided and this application June 24, 1970, Ser. No. 59,836
Int. Cl. C07c *121/30, 49/20, 47/20*
U.S. Cl. 260—465.9 **9 Claims**

A process for producing α,β-unsaturated aldehydes, ketones or nitriles which comprises contacting formaldehyde and a saturated aldehyde, ketone or nitrile at 300° to 525° C. in the presence of at least one inorganic oxide of a rare earth metal of the lanthanide series impregnated on a silica gel, alumina or kieselguhr support.

3,701,799
PLANT GROWTH REGULATORS
Llewellyn W. Fancher, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.
No Drawing. Filed Apr. 2, 1970, Ser. No. 25,296
Int. Cl. C07c *93/18, 93/22, 93/26*
U.S. Cl. 260—468 P **3 Claims**

Novel esters of chrysanthemumic acid are disclosed. The compounds are useful as plant growth regulators.

3,701,800
CIS 1-METHYL-2-ISOPROPENYL-CYCLOBUTYL ACETIC ACID
Rene C. Zurfluh and John B. Siddall, Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.
No Drawing. Original application Oct. 22, 1969, Ser. No. 870,009. Divided and this application June 25, 1971, Ser. No. 156,944
Int. Cl. C07c *61/16, 69/74*
U.S. Cl. 260—468 H **3 Claims**

Stereospecific synthesis of sex attractant component of the boll weevil by halogenation of 6-methylbicyclo [4,2,0]octan-2-one or ketal thereof, dehydrohalogenation, methylation of ketone, mild oxidative cleavage to desired cis isomer, Wittig conversion of ketone to methylene and reduction of acid or ester thereof to cis 2-(1'-methyl-2'-isopropenyl-cyclobutyl)ethanol.

3,701,801
ALKYL ESTERS OF 4-CHLORO-ALKYLRESORCYLIC ACID
James Douglas Grossman, Old Bridge, and Kenneth K. Light, Freehold, N.J., assignors to International Flavors and Fragrances Inc.
No Drawing. Filed Feb. 8, 1971, Ser. No. 113,699
Int. Cl. C07c *69/78*
U.S. Cl. 260—473 S **3 Claims**

A process is described for the preparation of alkyl 3-chloro ring-substituted resorcylic acid esters which comprises reacting at temperatures of from −20 up to +50° C. an alkyl ring-substituted dihydroresorcylic acid ester with an oxidative chlorine source. Certain novel alkyl 3-chloro ring-substituted resorcylic acid esters which give to fragrances natural and distinctly oakmoss or mousse-like notes are obtained.

3,701,802
CYANOETHYLATION OF HYDROXY COMPOUNDS
Gerhard Maerker, Oreland, and Harold E. Kenney, Jenkintown, Pa., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Continuation-in-part of application Ser. No. 594,252, Nov. 14, 1966. This application Aug. 22, 1969, Ser. No. 852,469
Int. Cl. C09f *7/00*
U.S. Cl. 260—404 **8 Claims**

Long chain fatty acid derivatives containing at least one hydroxyl group per molecule are cyanoethylated by dissolving them in acrylonitrile and adding a strong base to catalyze the reaction between the fatty acid derivative and the acrylonitrile to provide a β-cyanoethylated product. The acrylonitrile functions both as a solvent and as a reactant.

A non-exclusive, irrevocable, royalty-free license in the invention herein described, throughout the world for

all purposes of the United States Government, with the power to grant sublicenses for the purposes, is hereby granted to the Government of the United States of America.

3,701,803
METHOD FOR THE PRODUCTION OF ACETOACETIC ACIDS
Karl-Josef Boosen, Visp, Switzerland, assignor to Lonza Ltd., Basel, Switzerland
No Drawing. Filed July 2, 1969, Ser. No. 838,646
Claims priority, application Switzerland, July 4, 1968, 10,035/68
Int. Cl. C07c *59/32, 59/36*
U.S. Cl. 260—526 R 9 Claims

The hitherto-undescribed crystalline acetoacetic acid and halogeno-acetoacetic acids of the formula

$$R_1CH_2—CO—CR_2R_3—COOH$$

in which R_1, R_2 and R_3 each represent hydrogen or R_1 represents halogen (preferably chlorine or bromine) and R_2 and R_3 each represents hydrogen or halogen (preferably chlorine or bromine) are obtained by converting diketene into an acetoacetic acid halide or halogeno-acetoacetic acid halide by means of hydrogen halide or halogen at a temperature of from about −10 to −40° C., and the acetoacetic acid halide or halogenoacetoacetic acid halide is converted into the corresponding acid by hydrolysis with a stoichiometrically equivalent quantity of water.

3,701,804
PROCESS FOR ADIPIC ACID MANUFACTURE
Walter H. Knoth, Jr., Mendenhall, Pa., and George W. Parshall, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Mar. 19, 1971, Ser. No. 126,345
Int. Cl. C07c *55/14*
U.S. Cl. 260—530 R 5 Claims

Disclosed herein is a process for the manufacture of adipic acid, a reactant in the preparation of 6,6 nylon, comprising reacting cyclohexene and acetaldehyde in the presence of oxygen and a catalyst consisting of a salt of one of the metals vanadium, tungsten, molybdenum, osmium or ruthenium, said process optionally employing a cocatalyst consisting of an inorganic nitrogen-containing compound.

3,701,805
PREPARATION OF CITRACONIC AND ITACONIC ACIDS
Rudolph G. Berg, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.
No Drawing. Filed Sept. 27, 1971, Ser. No. 184,260
Int. Cl. C07c *51/38*
U.S. Cl. 260—531 R 4 Claims

High purity citraconic or itaconic acid can be prepared by a two step process using citric acid, isocitric acid, isocitric lactone, aconitic acid, their anhydrides or mixtures thereof as the starting reactant. The first step is a vapor-phase catalytic conversion of the starting reactant in admixture with an inert gas at about 215–400° C. to citraconic acid or anhydride from which citraconic acid can be recovered. The second step involves isomerization of the aqueous citraconic acid solution obtained to yield itaconic acid. The catalytic material employed in the first step comprises a supported alkali or alkaline earth metal salt of phosphoric acid, pyrophosphoric acid, boric acid, or sulfuric acid. The concentration of active catalyst material on the inert support is preferably about 0.1–5 weight percent for alkali metal dihydrogen phosphates. Potassium dihydrogen phosphate is most preferred as the active catalyst material. The second step isomerization is preferably carried out at 180–250° C. at an initial concentration of citraconic acid of 35–50 weight percent.

3,701,806
PROCESS FOR PREPARING A MIXTURE OF AROMATIC SULFONES AND AROMATIC SULFONYL CHLORIDES
Michael J. Keogh, Piscataway, and Arthur K. Ingberman, Somerville, N.J., assignors to Union Carbide Corporation
No Drawing. Filed June 10, 1966, Ser. No. 556,591
Int. Cl. C07c *143/70, 147/06*
U.S. Cl. 260—543 R 9 Claims

Mixtures of aromatic sulfones and sulfonyl chlorides are prepared by reacting an aromatic compound having the formula:

where X is hydrogen, fluoro, chloro, bromo, or methyl with a mixture of sulfur trioxide and thionyl chloride.

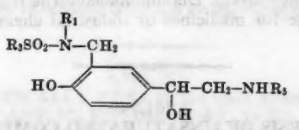
3,701,807
N-(1-CYCLOALKEN-1-YL) UREAS AND THIOUREAS
John P. Chupp, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Continuation-in-part of application Ser. No. 721,877, Apr. 16, 1968, which is a continuation of application Ser. No. 523,856, Feb. 1, 1966. This application Nov. 12, 1968, Ser. No. 775,104
Int. Cl. C07c *127/18*
U.S. Cl. 260—553 A 11 Claims

N-(1-cycloalken-1-yl)ureas and thioureas prepared by the reactions of a N-substituted imine with an isocyanate.

These compounds are useful as biocides, particularly phylotoxicants.

3,701,808
PHENYLETHANOLAMINES
David Hartley, Lawrence Henry Charles Lunts, and David Jack, London, England, assignors to Allen & Hamburys Limited, London, England
No Drawing. Original application Dec. 10, 1968, Ser. No. 782,742, now Patent No. 3,644,520. Divided and this application May 11, 1971, Ser. No. 142,420
Claims priority, application Great Britain, Dec. 21, 1967, 58,012/67
Int. Cl. C07c *143/74*
U.S. Cl. 260—556 A 5 Claims

Compounds of the formula



wherein R_1 is H or alkyl of 1 to 6 carbon atoms; R_3 is alkyl of 1 to 6 carbon atoms, phenyl or phenyl substituted by lower alkyl and R_5 is H, alkyl of 1 to 6 carbon atoms, cyclopentyl or alkyl of 1 to 6 carbon atoms substituted by phenyl, lower alkoxyphenyl or phenoxy; or physiologically acceptable acid addition salts thereof. The compounds possess stimulant or blocking actions on adrenergic receptors.

3,701,809

CYCLIC PROCESS FOR THE PREPARATION OF AN OXIME FROM A HYDROXYLAMMONIUM SALT SOLUTION

Abraham H. de Rooij, Geleen, and Ferdinand J. G. Kwanten, Sittard, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed Nov. 12, 1969, Ser. No. 875,723
Claims priority, application Netherlands, Nov. 12, 1968, 6816075
Int. Cl. C07c *131/00;* C01c *1/28;* C01b *21/00*
U.S. Cl. 260—566 A 1 Claim

A cyclic process in which an aqueous acid reaction mixture is kept in circulation between a zone for the synthesis of hydroxylamine and a zone for the synthesis of oxime. Nitric acid is continuously added to the circulating liquid, the nitrate ions being catalytically reduced with H_2 to form NH_2OH and some NH_3 as by-product. The NH_2OH is consumed in oxime synthesis zone and the NH_3 by-product is continuously removed by contacting the circulating liquid with a mixture containing NO and NO_2 under such conditions that N_2 and H_2O result.

3,701,810

PROCESS FOR THE PRODUCTION OF METHYL ETHYL KETONE FROM n-BUTENE

Hiroshi Hasegawa, 500 Shimotsu, Shimotsu-cho, Kaisogun, and Makoto Iriuchijima, 448 Kata, Shimotsu-cho, Kaiso-gun, both of Wakayama, Japan

Filed Dec. 4, 1968, Ser. No. 780,958
Int. Cl. C07c *45/02;* B01j *11/78, 11/82*
U.S. Cl. 260—597 B 12 Claims

Producing methyl ethyl ketone at a high space-time yield with reduced formation of by-products comprising contacting n-butene with an aqueous catalyst solution containing a water-soluble chloride compound, water-soluble palladium compound and ferric sulfate, the chlorine ion content (per liter) of said aqueous solution being 0.005–0.15 gram-ion and the chemical equivalent ratio of chlorine to palladium in the solution being within the range 1.5/1–20/1. The novel catalyst solution described also forms part of the present invention.

3,701,811

ALKYLATION OF PHENOLS

Thomas Nicklin, Middleton, England, assignor to The Gas Council, London, England

No Drawing. Filed Apr. 14, 1969, Ser. No. 816,046
Int. Cl. C07c *37/16*
U.S. Cl. 260—621 R 4 Claims

Phenols having either or both of the ortho positions available for substitution are alkylated with an alkyl group having up to three carbon atoms by contacting the phenol and the alkanol corresponding to the alkyl group with a catalyst comprising cerium oxide and uranium oxide. The active ingredients are preferably disposed on the surface of a catalyst carrier, and the process is particularly useful in the methylation of phenol itself.

3,701,812

PROCESS FOR PREPARATION OF TRICYCLOPENTADIENE

Herbert J. Gebhart, Jr., Ferguson, and Earle C. Makin, Jr., St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Oct. 5, 1970, Ser. No. 78,252
Int. Cl. C07c *13/28*
U.S. Cl. 260—666 PY 12 Claims

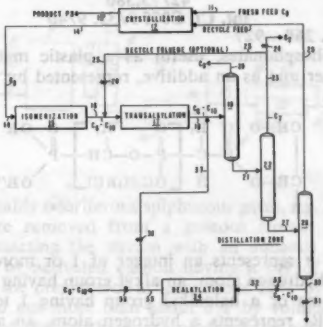
A process for preparing tricyclopentadiene from a feed stream containing dicyclopentadiene comprising heating the stream at a temperature of from 260 to 310° C. for a period of from 5 to 25 minutes and under a pressure sufficient to maintain cyclopentadiene essentially in solution. The process produces tricyclopentadiene in ylelds generally above 70 percent and substantially excludes production of cyclopentadiene polymers higher than the trimer.

3,701,813

PRODUCTION OF AROMATICS

Donald G. Stenmark, Houston, Tex., assignor to Esso Research and Engineering Company

Filed Nov. 12, 1970, Ser. No. 88,786
Int. Cl. C07c *5/28, 3/62*
U.S. Cl. 260—668 A 14 Claims



In the liquid phase isomerization of a selected monocyclic aromatic hydrocarbon, such as a xylene to p-xylene, the production of the selected aromatic hydrocarbon is enhanced and the amount of recycled unisomerized hydrocarbon is reduced by transalkylation of the isomerizate prior to recycle of the transalkylate and separation of it into its component fractions.

3,701,814

PROCESS OF ALKYLATION WITH BASE OF METAL OXIDE

Wilbur L. Shilling, Camas, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

No Drawing. Filed Mar. 27, 1970, Ser. No. 23,502
Int. Cl. C07c *69/38, 69/76*
U.S. Cl. 260—475 SC 2 Claims

A base catalyzed alkylation process wherein the base employed is a metal oxide wherein the metal is lithium, sodium, potassium, calcium or barium. The preferred base is calcium oxide and the preferred solvent is dimethyl sulfoxide.

3,701,815

THERMOPLASTIC SILOXANE-POLYESTER BLOCK COPOLYMERS

Markus Matzner, Edison, Allen Noshay, East Brunswick, and Robert Barclay, Jr., New Brunswick, N.J., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 792,122, Jan. 17, 1969. This application Jan. 20, 1971, Ser. No. 108,161
Int. Cl. G08g *39/10, 47/10*
U.S. Cl. 260—824 R 10 Claims

This invention relates to thermoplastic siloxane-polyester block copolymers having siloxane blocks that are linear and contain dihydrocarbylsiloxane groups and polyester blocks that are linear and contain groups derived from aromatic dicarboxylic acids and diols.

The block copolymers of this invention are elastomeric or rigid, depending on their specific composition, even

though thermoplastic and have exceptional thermal and oxidative stability. The block copolymers are useful, for example, as molding resins and extruding resins.

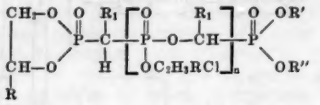
3,701,816

PHOSPHORUS-CONTAINING POLYMERS AND A PROCESS FOR THE PREPARATION THEREOF

Sumitaka Nogami, Asaka, Masaki Ishigami, Nobeoka, and Jiro Kurita, Yokohama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Kita-ku, Osaka, Osaka Prefecture, Japan

No Drawing. Filed Nov. 14, 1968, Ser. No. 775,953
Claims priority, application Japan, Nov. 16, 1967, 42/73,380
Int. Cl. C07f *9/32, 9/40*
U.S. Cl. 260—927 **10 Claims**

Polyphosphonates, useful as a plastic material, as a plasticizer and as an additive, represented by the general formula



wherein *n* represents an integer of 1 or more; R represents a hydrogen atom, an alkyl group having 1 to 4 carbon atoms or a haloalkyl group having 1 to 4 carbon atoms; R_1 represents a hydrogen atom, an alkyl group having 1 to 6 carbon atoms, a phenyl group, an alkenyl group or a cyclohexyl group; and R′ and R″ which may be the same or different and may form a phosphoran ring, each represent an alkyl group having 1 to 6 carbon atoms, a haloalkyl group having 1 to 6 carbon atoms or an aryl group and a process for the preparation of the same which comprises reacting a cyclic chlorophosphite with an aldehyde in the presence of an organic phosphite.

3,701,817

HALOGENATED PHOSPHORUS COMPOUNDS CONTAINING THE ATOM SKELETON P—(C—P)$_2$ OR P—(C—P)$_3$ AND PREPARATION

Ludwig Maier, Zurich, Switzerland, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Mar. 28, 1969, Ser. No. 811,638
Int. Cl. C07f *9/32, 9/40*
U.S. Cl. 260—932 **3 Claims**

Compounds of the formula

$$P(O)_a(OC_2H_5)_b[C(H)_cX_{2-c}P(O)(OC_2H_5)_2]_{3-b}$$

and processes for making by halogenating a compound of the formula

$$P(O)_a(OC_2H_5)_b[CH_2P(O)(OC_2H_5)_2]_{3-b}$$

The compounds are used as complexing agents and flame-proofing agents.

3,701,818

O-(HALOVINYL) PHOSPHORODICHLORIDOTHIOATES

Samuel B. Soloway and Juan G. Morales, Modesto, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Oct. 9, 1970, Ser. No. 79,630
Int. Cl. A01n *9/36;* C07f *9/16, 9/20*
U.S. Cl. 260—957 **4 Claims**

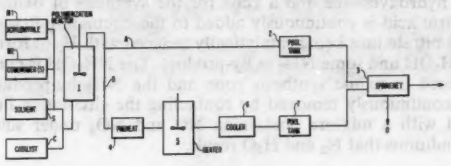
O-(halovinyl) phosphorodichloridothioates are useful as chemical intermediates in the preparation of biologically active O-(halovinyl) O,O-dihydrocarbyl phosphorothioates.

3,701,819

METHOD FOR PRODUCTION OF ACRYLIC COMPOSITE FIBER

Masatoshi Yoshida, Shizuoka, Yasuo Saji, Nakatogari, and Kazuhisa Saito and Shigeru Ikegami, Kamitogari, Japan, assignors to Toho Beslon Co., Ltd., Tokyo, Japan

Filed Aug. 14, 1969, Ser. No. 850,036
Claims priority, application Japan, Aug. 16, 1968, 43/58,435
Int. Cl. B29f *3/10;* D01d *5/22*
U.S. Cl. 264—168 **13 Claims**



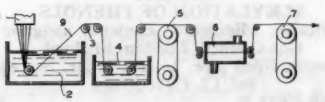
A method of producing acrylic composite fibers having excellent bulkiness and wool-like hand by conjugate spinning of a solution of an acrylonitrile polymer and a heat-treated solution thereof in the presence of a concentrated aqueous zinc chloride solution as the spinning solvent.

3,701,820

PROCESS FOR HIGH SPEED WET SPINNING OF ACRYLONITRILE FIBERS

Keijiro Kuratani and Keitaro Fukushima, Saidaiji, Japan, assignors to Japan Exlan Company Limited

Filed July 22, 1969, Ser. No. 843,437
Claims priority, application Japan, July 22, 1968, 43/52,011
Int. Cl. D01f *7/02*
U.S. Cl. 264—182 **2 Claims**



A process for producing acrylic synthetic fibers which have a uniform cross-sectional shape and luster at a high speed comprising extruding a spinning solution prepared from acrylonitrile polymers into an inert gas medium, then leading them into an aqueous coagulating bath to form unoriented gel fibers, washing with water, stretching and drying obtained fibrous materials and then re-stretching said fibrous materials in the presence of steam.

3,701,821

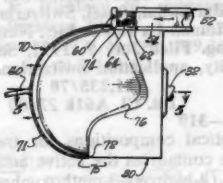
METHOD FOR MOULDING HELMET SHELLS AND THE LIKE

Ralph Barnes, 18909 Anelo Ave., Gardena, Calif. 90247

Filed Dec. 14, 1970, Ser. No. 97,619
Int. Cl. B29c *7/00*
U.S. Cl. 264—318 **1 Claim**

A helmet shell comprising a hollow generally hemiellipsoidal body provided with opposite integral converging lobes at the extremities of its minor axis is moulded in plastic material on a rigid core, from which it is removed by fulcruming about a point on a major axis of the core

to temporarily flex its lobes outwardly. This flexing is effected by camming action of the core's surface upon the interior surfaces of the lobes and accompanied by



temporary distortion of the hemiellipsoidal portion of the body toward a more nearly spherical configuration. Upon removal from the core, the helmet shell resumes the shape in which it was moulded.

3,701,822

PROCESS AND CATALYST FOR TREATING COMBUSTION EXHAUST GAS

John S. Negra, South Plainfield, and Abe Warshaw, Matawan, N.J., assignors to Chemical Construction Corporation, New York, N.Y.

No Drawing. Filed June 11, 1970, Ser. No. 45,576
Int. Cl. B01d *53/54*
U.S. Cl. 423—213 **3 Claims**

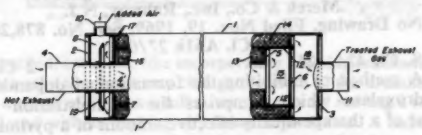
The exhaust gas from internal combustion engines or the like is treated to convert harmful or pollutant components such as nitrogen oxides, carbon monoxide and unburned hydrocarbons to innocuous compounds, by contacting the exhaust gas with a catalyst composition containing nickel, cobalt and manganese in catalytically effective amounts, deposited on a carrier such as alpha alumina.

3,701,823

METHOD AND MEANS FOR TWO-STAGE CATALYTIC TREATING OF ENGINE EXHAUST GASES

Leslie C. Hardison, Barrington, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of application Ser. No. 762,554, Sept. 25, 1968. This application Sept. 2, 1970, Ser. No. 69,060
The portion of the term of the patent subsequent to Dec. 1, 1987, has been disclaimed
Int. Cl. B01d *53/00;* **B01j** *9/04*
U.S. Cl. 423—213 **8 Claims**



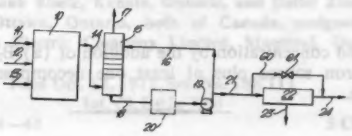
A two-stage catalytic treatment of engine exhaust gases by passing the hot gas stream without cooling and without added air through a first catalyst section to effect reduction of nitrogen oxides and then mixing air with the resulting stream for passage through a second stage catalyst section so as to effect more complete oxidation of CO and unburned hydrocarbons. A preferred apparatus is built to have the second catalyst stage along side of and in heat-exchange relationship with the first stage so as to assist in maintaining a high temperature first catalytic reduction section.

3,701,824

METHOD OF REMOVING ODORIFEROUS SULPHUR COMPOUNDS FROM VAPOURS OR GAS STREAMS

Steven Prahacs, Beaconsfield, Quebec, and Satya Pal Bhatta, Pointe Claire, Quebec, Canada, assignors to Pulp and Paper Research Institute of Canada, Quebec, Canada

Filed Oct. 2, 1970, Ser. No. 77,412
Claims priority, application Canada, Mar. 25, 1970, 78,366
Int. Cl. B01d *53/34*
U.S. Cl. 423—225 **26 Claims**



Objectionably odoriferous sulphurous gases, e.g. H_2S and CH_3SH, are removed from a gaseous stream by intimately contacting the stream with an aqueous alkaline suspension of activated carbon having a pH of at least about 8 in the presence of at least about 12% by volume of CO_2 and not more than about 6% by volume of O_2, the activated carbon thereby promoting the oxidation of sulphide ions and CH_3SH.

3,701,825

STABILIZATION OF HYDROGEN PEROXIDE WITH ETHYLENEDIAMINE TETRA (METHYLENEPHOSPHONIC ACID)

Kenneth J. Radimer, Little Falls, and Theodore F. Munday, Kendall Park, N.J., assignors to FMC Corporation, New York, N.Y.

No Drawing. Filed Oct. 23, 1970, Ser. No. 83,606
Int. Cl. C01b *15/02;* **C07d** *105/02*
U.S. Cl. 423—273 **9 Claims**

An aqueous hydrogen peroxide solution is stabilized against decomposition by contaminants such as cations of iron, copper, manganese, and the like, by addition of a water-soluble ethylenediamine tetra(methylenephosphonic acid) compound. This stabilized hydrogen peroxide solution is substantially less corrosive towards metals, especially aluminum, than prior stabilized hydrogen peroxide solutions. A synergistic improvement in stability comprises combining a water-soluble tin compound with the ethylenediamine tetra(methylenephosphonic acid) compound and the hydrogen peroxide. The incorporation of nitrate ion into the stabilized hydrogen peroxide solution provides a solution which is of especially low corrosivity towards metals, particularly aluminum, in comparison with hydrogen peroxide solutions stabilized with other stabilizers in the presence of nitrates.

3,701,826

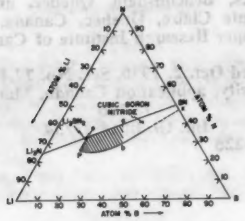
CUBIC BORON NITRIDE PREPARATION FROM LITHIUM-BORON-NITROGEN MIXTURES

Robert C. De Vries, Burnt Hills, and James F. Fleischer, Scotia, N.Y., assignors to General Electric Company

Filed Jan. 28, 1971, Ser. No. 110,513
Int. Cl. C01b *21/06*
U.S. Cl. 423—290 **7 Claims**

The presence of oxygen has been found to be necessary during the reaction to produce cubic boron nitride crystals in the lithium-boron-nitrogen system when a lithium-rich system is employed particularly if much of

the lithium is present as Li_3BN_2. The preferred mechanism is to provide the oxygen in the reaction mixture in the



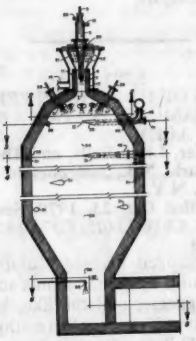
desired concentration by the addition of (a) B_2O_3 or (b) a boron source plus at least one decomposable metal oxide.

3,701,827

PROCESS AND APPARATUS FOR THE PRODUCTION OF LARGE PARTICLE-SIZE, LOW STRUCTURE CARBON BLACK

Karel R. Dahmen, Houston, Tex., assignor to Continental Carbon Company, Houston, Tex.

Filed July 13, 1971, Ser. No. 162,064
Int. Cl. C09c *1/50*
U.S. Cl. 423—456 **29 Claims**



Large particle-size, low structure carbon black resembling thermal black is produced by a process and apparatus involving two stages of introduction of hydrocarbon oil feedstock. The first stage involves the introduction of a minor portion of the total feedstock axially into a tubular reactor section, the reaction products from which pass into an enlarged-diameter section into which the major portion of the feedstock is introduced radially in a downstream angle through a plurality of nozzles. The first-stage feedstock is heated by hot combustion gases, and supplementary heat is added to the enlarged-diameter section at a plurality of locations along that section.

3,701,828

HYDROTHERMAL SYNTHESIS OF PEROVSKITE COMPOSED OF $CaO \cdot TiO_2$

Robert Ian Harker, Bala Cynwyd, Pa., assignor to Johns-Manville Corporation, New York, N.Y.

No Drawing. Filed Feb. 3, 1971, Ser. No. 112,423
Int. Cl. C01g *23/00*; C01f *11/00*
U.S. Cl. 423—598 **5 Claims**

Hydrothermal method of synthesizing the mineral perovskite from lime and titania, and the product thereof exhibiting unique pigment and radiation opacifying characteristics.

3,701,829

TREATMENT OF PARKINSON'S DISEASE

Giuseppe Bartholini, Basel, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed July 9, 1971, Ser. No. 162,028
Claims priority, application Switzerland, July 24, 1970, 11,235/70
Int. Cl. A61k *27/00*
U.S. Cl. 424—319 **9 Claims**

Pharmaceutical compositions for treating Parkinson's disease which contain as the active anti-Parkinsonism ingredient, L-3-(4-hydroxy-3-methoxyphenyl)-alanine, or a hydrate or pharmaceutically acceptable salt thereof, and as an optional ingredient, a peripheral decarboxylase inhibitor, are described. The compositions are useful for the treatment of Parkinson's disease with little or none of the side-effects usually associated with L-dopa.

3,701,830

METHOD FOR IMPROVING ORAL HEALTH AND HYGIENE IN DOGS AND CATS

Bernard W. Weinrich, St. Charles, and David C. Boyce, Webster Groves, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 9,999, Feb. 9, 1970, which is a continuation-in-part of application Ser. No. 846,930, Aug. 1, 1969, both now abandoned. This application Feb. 26, 1971, Ser. No. 119,421
Int. Cl. A61k *19/00*
U.S. Cl. 424—94 **4 Claims**

Pet food compositions useful in promoting oral health and hygiene in dogs and cats consisting essentially of a solid, nutrient feed having incorporated therein neutral protease enzyme. The neutral protease is obtained by fermentation with a neutral protease producing microorganism preferably a strain of *Bacillus subtilis* or *Bacillus stearothermophilus*. The amount of neutral protease in the food composition typically is in the range of from about 4,000 to about 4,000,000 active units of enzyme per pound of feed. A method for removing plaque from, and preventing the formation of calculus on the teeth of dogs and cats is provided by feeding to dogs and cats said pet food composition.

3,701,831

METHOD OF INHIBITING DOPAMINE β-HYDROXYLASE

Curt C. Porter, Glenside, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Nov. 19, 1969, Ser. No. 878,209
Int. Cl. A61k *27/00*
U.S. Cl. 424—251 **2 Claims**

A method of inhibiting the formation of dopamine β-hydroxylase which comprises the administration to a host of a therapeutically-effective amount of a pyrimidine.

3,701,832

METHOD OF INHIBITING DOPAMINE β-HYDROXYLASE

Curt C. Porter, Glenside, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Nov. 19, 1969, Ser. No. 878,179
Int. Cl. A61k *27/00*
U.S. Cl. 424—273 **4 Claims**

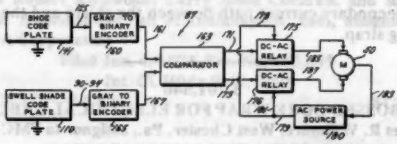
Method of inhibiting dopamine β-hydroxylase which comprises the administration to a host of a therapeutically-effective amount of a mercaptoimidazole or a mercaptobenzimidazole.

ELECTRICAL

3,701,833
SWELL SHADE CONTROL

Walwin J. Bosche, Jr., Highland, Ill., assignor to The Wicks Organ Company, Highland, Ill.

Filed Nov. 16, 1971, Ser. No. 199,205
Int. Cl. G10b *3/16*
U.S. Cl. 84—346 **14 Claims**

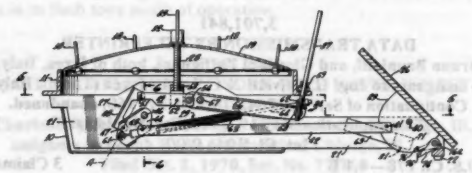


This invention relates to a swell shade control for use with pipe organs and comprises an actuator means and means for connecting the actuator means to the swell shades such that operation of the actuator means in one direction opens the shades, and operations of the actuator means in the opposite direction closes the shades. A command means transmits a first set of electrical signals to an electrical network, which signals represent a final swell shade position. Means responsive to the position of the swell shades are also provided for transmitting second sets of signals to the electrical network representing the instantaneous positions of the shades. The electrical network includes means for generating control signals depending on how the first and second sets of signals compare, which control signals are used to operate the actuator means in a direction to move the swell shades toward the final position.

3,701,834
KETTLEDRUM AND TUNING MECHANISM THEREFOR

Alfred M. Rubio, Chicago, Ill., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Continuation of Ser. No. 822,542, May 7, 1969, abandoned. This application May 10, 1971, Ser. No. 142,018
Int. Cl. G10d *13/04*
U.S. Cl. 84—419 **32 Claims**

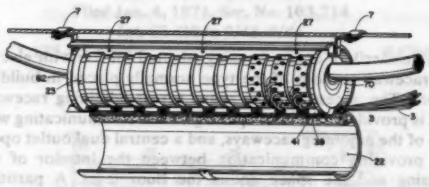


A kettledrum or the like incorporating a tuning mechanism whereby the timpanist may change the pitch of the drumhead over a range of at least a full octave by merely moving a foot pedal and without making any other adjustments. A linkage and counter-balancing spring means are so related to each other that the torques in opposite directions about a pivot point remain generally balanced throughout the full octave range, in order that the timpanist may achieve any desired pitch in a simple and accurate manner and without the necessity for excessive foot pressure. Friction brake means are employed to insure that the pedal will remain in any position to which it is adjusted by the timpanist, but the indicated torques are such that the amount of drag required from the friction brake is not great. Two interconnected four-bar linkages connect the foot pedal with the drumhead. One of such linkages is associated with a fine-tuning means which is readily adjustable by the timpanist without leaning over the drumhead. Such fine-tuning means complements a quick-acting master-tuning element. The linkages and associated elements are such that there is no "hair trigger" action at any portion of the scale. Instead, a reasonable degree of foot pedal pivot is required to change from any desired pitch to the pitch next higher or next lower. Means are provided to lock the foot pedal, when the instrument is not in use, in order to achieve various benefits including ease of drumhead changing.

3,701,835
MULTIPLE CONDUCTOR CABLE TERMINAL

Werner Frank Eisele, Kanata, Ontario, and Detlef Zimmermann, Ottawa, Ontario, both of Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Oct. 12, 1971, Ser. No. 188,111
Int. Cl. H02g *7/06*
U.S. Cl. 174—41 **5 Claims**

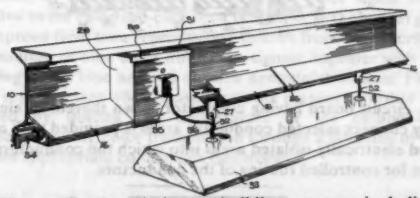


A multiconductor cable terminal unit, particularly useful in aerial telephone outside plant applications utilizing unpressurized PVC cable is disclosed. The terminal unit, designed for installation by a telephone lineman provides a limited access cable compartment within which electrical leads from a number of terminal blocks may be spliced into the telephone cable. Thereafter, electrical connection of telephone services via the terminal blocks may be carried on without direct physical access to the telephone cable which is failure prone when handled roughly in the area of the splices.

3,701,836
BUILDING STRUCTURES

Wilfred Ward, and Frank Ward, both of East Yorks, England, assignors to Ward Brothers (Sherburn) Limited, Sherburn, Malton, England

Filed June 28, 1971, Ser. No. 157,189
Claims priority, application Great Britain, June 27, 1970, 31,290/70
Int. Cl. H02g *3/04*
U.S. Cl. 174—48 **9 Claims**



This specification discloses a building structure including a structural member comprising a web, two flanges projecting from opposite edges of the web and inturned lips at the free edges of the flanges; electrical wiring laid in a channel defined by one of the flanges, its inturned lip and the portion of the web adjacent to said flange; and a U-section cover member having limbs which interfit with said lip and said portion of the web and a base which extends over the mouth of the channel thus protecting the wiring.

3,701,837

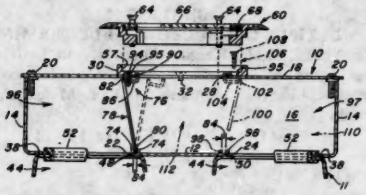
MULTIPLE ELECTRICAL SERVICE UNDERFLOOR ACCESS HOUSING

Frank W. Fork, Allison Park, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 862,277, Sept. 30, 1969, abandoned. This application March 18, 1971, Ser. No. 125,490

Int. Cl. H02g *3/08, 3/28*

U.S. Cl. 174—50 **11 Claims**



An underfloor access housing adapted for use with electrical raceway sections of the type normally placed in building floors. The access housing spans across adjoining raceways and is provided with inlet openings, each communicating with one of the adjoining raceways, and a central dual outlet opening providing communication between the interior of the housing and the space above the floor level. A partition detachably retained within the housing, divides the interior of the housing into separate compartments, each including one of the inlet openings. The partition is adapted to support an electrical plug receptacle whereby electrical connections may be made beneath the level of the finished floor.

3,701,838

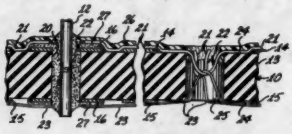
CIRCUIT BOARD

Frederick D. Olney, Jr., Phoenix, Ariz., assignor to Honeywell Information Systems Inc.

Filed June 29, 1970, Ser. No. 50,508The portion of the term of this patent subsequent to Feb. 29, 1989, has been disclaimed.

Int. Cl. H05k *3/32*

U.S. Cl. 174—68.5 **6 Claims**



A circuit board having conductors sewn therein to electrically connect selected conductive areas is provided with apertured electrically-isolated areas into which the conductors are sewn for controlled routing of the conductors.

3,701,839

SHIELD CONNECTOR FOR MULTI-STRAND SHIELDED CABLES

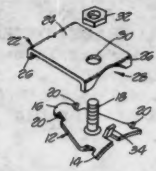
Donald J. Smith, Canoga Park, Calif., assignor to Smith-Schreyer & Assoc., Inc.

Filed Aug. 2, 1971, Ser. No. 168,087

Int. Cl. H01r *11/10, 11/20*

U.S. Cl. 174—78 **12 Claims**

A connector for use in splicing multi-strand shielded cables, particularly designed for interconnecting the shields thereof. Here the connector is provided with a protruding tang providing a secondary current path between the shield and the connecting strap.



3,701,840

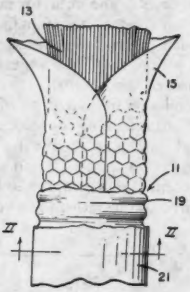
EMBOSSED CORE WRAP FOR ELECTRICAL CABLES

Charles R. Willmore, West Chester, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed May 11, 1971, Ser. No. 142,211

Int. Cl. H01b *7/24*

U.S. Cl. 174—107 **5 Claims**



An electrical cable having a conductor core and a protective covering therefor with an embossed polyester film interposed between the periphery of the conductor core and the protective covering. The embossed film provides an essentially liquid-tight seal about the conductor core and affords mechanical protection, thermal insulation, dielectric protection and electrical stability for such core.

3,701,841

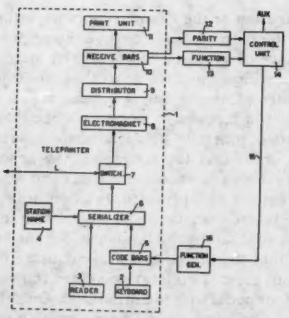
DATA TRANSMISSION BY TELEPRINTER

Bruno Brunialti, and Giovanni Zaffignani, both of Ivrea, Italy, assignors to Ing. C. Olivetti & C.S.p.A., Ivrea (Turin), Italy

Continuation of Ser. No. 764,118, Oct. 1, 1968, abandoned. This application May 19, 1971, Ser. No. 145,055

Int. Cl. H04q *9/00*

U.S. Cl. 178—4.1 B **3 Claims**



Terminal station equipment for exchange of messages with a central data collecting station, including both message

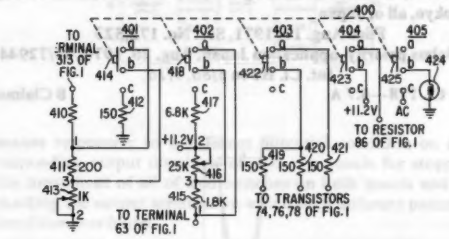
characters and service functions. The terminal station equipment includes a recognition device for the service functions and a parity checking device for the message characters, and a control unit responsive to both for controlling the generation of service functions necessitated by the information detected thereby.

3,701,842

COLOR COMPENSATING NETWORK WITH RANGE LIMITATION

Loren Robert Kirkwood; Larry Allen Cochran, and Robert Dale Altmanshofer, all of Indianapolis, Ind., assignors to RCA Corporation

Filed Jan. 4, 1971, Ser. No. 103,699
Int. Cl. H04n *9/48, 9/50*
U.S. Cl. 178—5.4 HE **9 Claims**



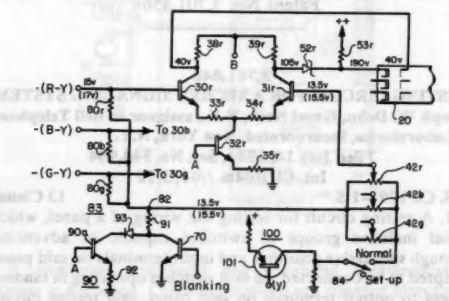
Pending U.S. Pat. applications Ser. No. 36,045, filed May 11, 1970, entitled "TINT CORRECTION CIRCUITS", now U.S. Pat. No. 3,619,487 and Ser. 103,714, filed concurrently herewith, entitled "COLOR COMPENSATING NETWORK FOR AN INTEGRATED CIRCUIT TELEVISION RECEIVER" describe arrangements for improving flesh tone rendition in a reproduced image through a selective reduction in Q channel signal gain. The present invention utilizes a switch to energize circuitry—as in the disclosures of the above-noted applications—to effect such gain reduction in the presence of spurious phase errors of the color signal burst relative to the color sub-carrier, and additionally connects the switch in a manner to limit the range of saturation and tint control changes at the same time. This compression of possible range is in a direction to reduce the amount of color variation which could otherwise be introduced into the image by a viewer misadjusting such available controls when his receiver is in its flesh tone mode of operation.

3,701,843

MATRIX AMPLIFIER NETWORK WITH NOVEL D-C SET-UP ARRANGEMENT

Charles F. Hepner, and George J. Tzakis, both of Chicago, Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Oct. 5, 1970, Ser. No. 77,769
Int. Cl. H04n *9/50*
U.S. Cl. 178—5.4 SD **13 Claims**



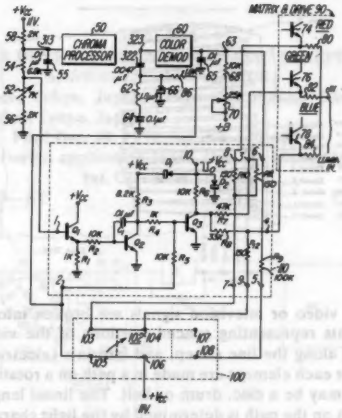
A matrix amplifier network, preferably of a monolithic configuration, having three transistorized differential amplifiers and a common bias arrangement to maintain conduction at the same current level. Means are included to operate the differential amplifiers in push-pull fashion to develop the desired primary color control signals. The matrix amplifier network further includes a novel set-up arrangement incorporating respective voltage dividers interconnected in a manner to develop a d-c control potential for establishing and maintaining reference black level notwithstanding variations in the d-c output levels of the associated chroma demodulators as frequently encountered in integrated circuit arrangements between unit-to-unit, or as may otherwise result from receiver power supply or line voltage fluctuations.

3,701,844

COLOR COMPENSATING NETWORK FOR AN INTEGRATED CIRCUIT TELEVISION RECEIVER

Larry Allen Cochran, Indianapolis, Ind., assignor to RCA Corporation

Filed Jan. 4, 1971, Ser. No. 103,714
Int. Cl. H04n *9/48, 9/46*
U.S. Cl. 178—5.4 HE **8 Claims**



The present invention describes a color compensating network which is coupled to available terminals on such circuit devices to improve the reproduction of flesh tones in the presence of spurious phase errors of the color signal burst relative to the color sub-carrier. A reduction in Q channel gain to improve flesh tone reproduction follows from the described attenuation of blue color difference signals, together with the shifting of the blue and red chroma demodulation axes. Flesh tone reproduction when phase errors are present is further improved by shifting the temperature of the cathode-ray kinescope during color transmission through a lowering of the bias on appropriate control gun electrodes.

3,701,845

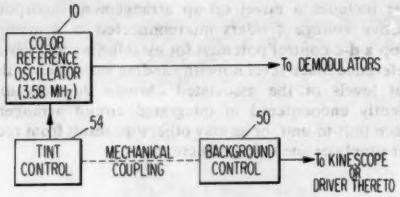
HUE CONTROL CIRCUIT FOR A COLOR TELEVISION RECEIVER

John Stark, Jr., Indianapolis, Ind., and David Harry Carpenter, Fairfield, Conn., assignors to RCA Corporation

Filed Jan. 7, 1971, Ser. No. 104,625
Int. Cl. H04n *9/02*
U.S. Cl. 178—5.4 HE **7 Claims**

The hue of a color image is controlled by a variable resistor which shifts the phase of a generated reference carrier wave

with respect to the phase of a received chrominance signal, and which also correspondingly shifts the background color of



the reproduced picture so as to further obtain a more pleasing display on the color kinescope screen.

3,701,846

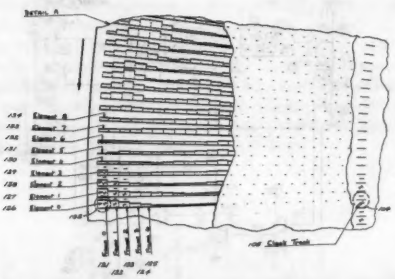
METHOD AND APPARATUS FOR RECORDING AND REPRODUCING VIDEO

George E. Zenzefilis, 27 Los Vientos, Camarillo, Calif.

Filed March 27, 1970, Ser. No. 23,289

Int. Cl. G11b *5/06, 5/82;* **H04n** *5/78*

U.S. Cl. 178—6.6 DD **13 Claims**



The video or television signals are broken into numerous elements representing spaced portions of the video display screen along the line sweep, and imprints (electrical or optical) for each element are made in a path on a rotating medium which may be a disc, drum or belt. The lineal length of each imprint on the path is determined by the light characteristic of the video signal being recorded. Clock marks are permanently recorded in a separate path on the rotating medium, one for each spacing of the line elements, to accurately locate the elements on the rotating medium and thereby accurately locating the elements on the screen when the information is decoded. For the U.S. television operational mode, one rotation of the rotating medium takes place in one thirtieth of a second to give a complete picture frame, including interlacing.

Maximum density of imprints is achieved by using an extremely narrow width of about one ten thousandth to one thousandth of an inch wide, and not only make adjacent tracks contiguous but actually overlapping. This is accomplished by a highly efficient transducer in contact with the recording medium and to prevent this razor edge transducer from cutting the recording medium, a body surrounds the transducer structure to give a non-cutting bearing force per unit of area. With such narrow tracks, extreme accuracy of concentricity is required of the spindles on which the rotating medium moves and of the mounting of the medium on the spindles. The invention provides structure and a method of machining spindles that gives this extreme accuracy of concentricity.

Sound is supplied by using an unused portion of the video signal and the trailing edges of the line start pulses are convenient portions. Because the tracks may overlap or small errors in concentricity may occur that would otherwise meld together sound from two side-by-side tracks, only certain digitally spaced parts of one track are used for sound and different digitally spaced portions of another track are used. For example, every fourth line start pulse can be used on one track and the used pulses on the succeeding track are staggered with respect to the one track, and so on. The method and apparatus permits transcribing broadcast television signals or transcribing directly from a television set and permits playback directly into a set, or if modulated by very high or ultra high frequency waves, may be broadcast as conventional television, or introduced directly into a broadcast television receiver by attachment to the antenna terminals.

3,701,847

ELECTRON BEAM RECORDER

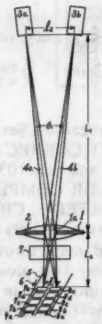
Sakae Miyauchi, 4-13, 3-chome, Yato-machi, Tanashi-shi, Tokyo; Kazumitsu Tanaka, 458 Gochi-cho, and Nobuo Goto, 2246-5, Kurinoshawa, Haijima-cho, both of Akishima-shi, Tokyo, all of Japan

Filed Aug. 17, 1971, Ser. No. 172,523

Claims priority, application Japan, Aug. 20, 1970, 45/72944

Int. Cl. H04n *5/86, 9/16*

U.S. Cl. 178—6.7 A **8 Claims**



An electron beam recorder comprises a plurality of electron guns, a condenser lens, a device for scanning the electron beams produced by the electron guns, a device for conveying a recording medium and a device for supporting said recording medium in a recording chamber forming part of the electron beam recorder. The electron beams are modulated by the information to be recorded. The beams intersect at the center of said condenser lens so as to impinge on different parts of said recording medium. The beams are made to scan the recording medium by the scanning device, each beam exposing different areas of said recording medium.

ERRATUM

For Class 178—26 see:
Patent No. 3,701,856

3,701,848

TESTING CIRCUIT FOR A SECRET SIGNALING SYSTEM

Joseph W. Dehn, Great Neck, N.Y., assignor to Bell Telephone Laboratories, Incorporated, New York, N.Y.

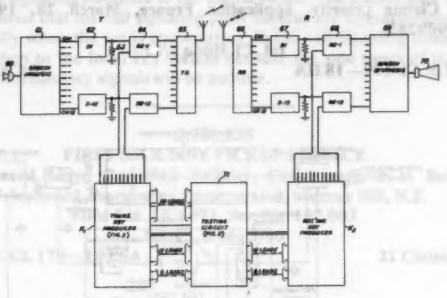
Filed July 14, 1944, Ser. No. 544,944

Int. Cl. H04m *1/68, 3/22*

U.S. Cl. 179—1.5 **13 Claims**

1. A testing circuit for testing the wiring of a panel, which panel includes groups of switches capable of advancing through successive positions and input terminals on said panel adapted to be connected via said switches operating in tandem stages to output terminals on said panel, said testing circuit comprising means for comparing said panel against a second similar panel and including means for applying test potentials

to the input terminals of both panels, means for causing all switches of both panels to move in unison, means to compare the potentials on the output terminals of one panel with the potentials on the corresponding terminals of the other panel,



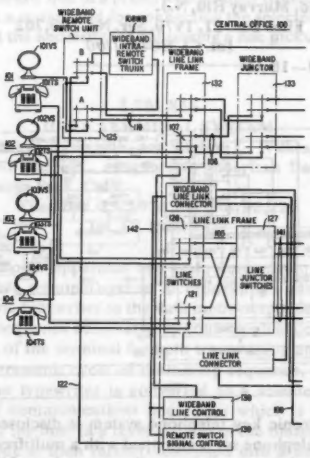
means responsive to a different potential condition on corresponding output terminals of said two panels for stopping the movement of all of said switches on both panels and for marking the output terminal on which such different potential condition was found.

3,701,849

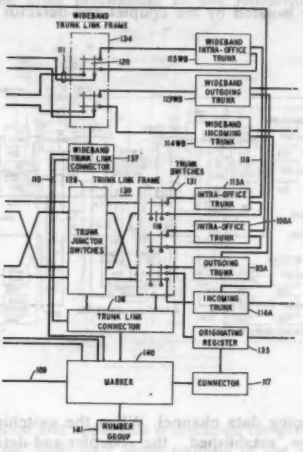
CONCENTRATOR ARRANGEMENT FOR WIDEBAND SWITCHING

Richard Joseph Stapleton, Westerville, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 9, 1970, Ser. No. 9,915
Int. Cl. H04m *11/06*; H04q *3/60*
U.S. Cl. 179—2 TV **6 Claims**



A combined voiceband and wideband communication system is disclosed. Customer stations are coupled directly to a switching office for voiceband service and wideband service is furnished to the stations via a concentrator which is controlled by the switching office. Signals transmitted from the stations directly to the office control the selection of voiceband or wideband paths to the stations. Provisions are also made for intraconcentrator wideband calls.

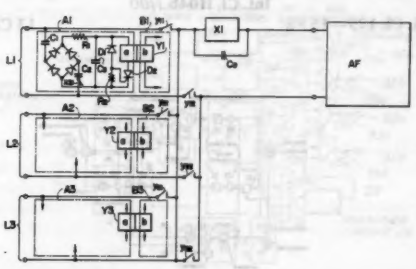


3,701,850

ADAPTER DEVICE FOR AN AUTOMATIC TELEPHONE ANSWERING APPARATUS

Shizuo Ando, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 29, 1970, Ser. No. 102,497
Claims priority, application Japan, Dec. 29, 1969, 44/2088
Int. Cl. H04m *1/64*
U.S. Cl. 179—6 C **7 Claims**



An adapter device connected between an automatic telephone answering apparatus and plural telephone lines, which connects the automatic telephone answering apparatus to the telephone line of a called telephone, so that the apparatus can be used to the best advantage.

3,701,851

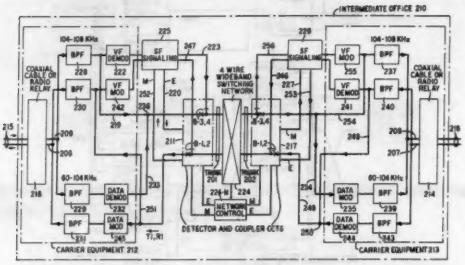
SWITCHING VOICE AND DATA COMMUNICATIONS SIMULTANEOUSLY OVER A COMMON PATH

William Roswell Starrett, Lincroft, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 9, 1970, Ser. No. 96,313
Int. Cl. H04j *1/14*
U.S. Cl. 179—15 BY **11 Claims**

An integrated voice-and-data communication system is disclosed wherein voice-and-data channels are frequency multiplexed and switched through a wideband switching network on a common four-wire path. When the switching connection is being established, coupler-and-detector circuits couple the

voice channel, demultiplexed to baseband, to the network so that network control signals in the voice channel can be employed to establish the connection. The control signals, however, are isolated by the coupler-and-detector circuits from



the outgoing data channel. When the switching connection has been established, the coupler-and-detector circuits disconnect the baseband voice channel and connect frequency multiplexed voice and data signals to the common four-wire path through the network.

3,701,852

TRANSMISSION SYSTEM AND ASSOCIATED TRANSMITTERS AND RECEIVERS FOR THE TRANSMISSION OF SYNCHRONOUS PULSE SIGNALS

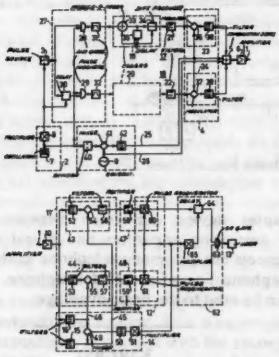
Robert Johannes Sluijter, and Petrus Josephus Van Gerwen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 23, 1971, Ser. No. 173,877

Claims priority, application Netherlands, Aug. 29, 1970, 7012827

Int. Cl. H04b *1/00*

U.S. Cl. 179—15 FS **13 Claims**



A transmission system for the transmission of binary synchronous pulse signals in the base group of a carrier telephony system in which these pulse signals are converted into two separate pulse signals, at half the original information speed each, which separate pulse signals are each modulated in accordance with a single sideband method on carrier signals of different frequencies located on either side of the central portion of the transmission band (base group) so that the transmitted frequency spectrum is constituted by the two non-adjacent single sideband signals.

3,701,853

SELECTION SYSTEMS FOR ELECTRICAL CIRCUITS OR EQUIPMENTS

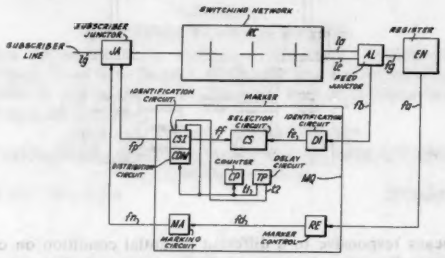
Georges A. Duval, Fresnes, and Francois Hernandez, Epinay-sur-Seine, both of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 27, 1970, Ser. No. 15,161

Claims priority, application France, March 28, 1969, 6909285

Int. Cl. H04q *3/62*

U.S. Cl. 179—18 HA **5 Claims**



Selection system applicable, namely, in telephone exchanges for the calls to subscriber lines grouped under a same number.

It enables selecting a free line (1*g*) out of a group of lines with the purpose of connecting it to a common unit (AL) through a connecting network (RC). A device (MA) designates the lines in the called group. A circuit (CSI) selects one free line out of the designated lines, according to an order of priority provided by a distributing circuit (CDM). Renewing means enable selecting another line when the connection does not take place, in case of congestion. The circuit (CDM) then gives highest priority to the line immediately following the one unable to be connected to.

3,701,854

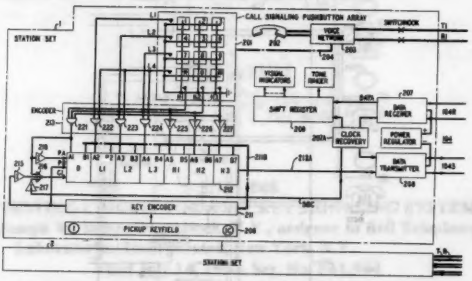
KEY TELEPHONE SYSTEM CALL SIGNALING AND STATION SET DATA TRANSFER ARRANGEMENT

Harold Peter Anderson, and Francis Michael Fenton, both of Boulder, Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1970, Ser. No. 100,202

Int. Cl. H04m *1/00*

U.S. Cl. 179—18 AD **13 Claims**



An electronic key telephone system is disclosed in which each key telephone set is equipped with a multifrequency call signaling push-button dial as well as a number of line pick-up keys. Regardless of the number of pick-up keys on a set, it is connected to the local key system via only a single pair of tip and ring conductors and a data link. The identity of an operated pick-up key is transmitted to the local key system over the data link. The multifrequency call signaling dial is

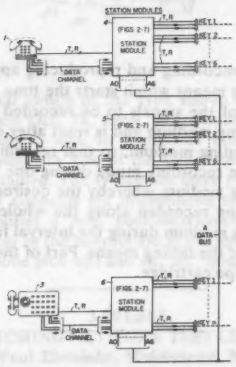
modified to generate the normal multifrequencies and in addition is connected to a digital encoder to transmit the identity of an operated call signaling push button over the data link when a certain pick-up key is operated. The local telephone system thus may dispense with the need for analog tone signaling receivers and can employ the operated push buttons for call signaling purposes in the digital mode. The station user is assured that his call signaling push buttons are operating correctly when the set is transmitting digital call signaling information to the local key system because the side tones of the multifrequency signals will be audible.

3,701,855

FIRST IDLE LINE PICKUP SERVICE

Howard Lloyd Reynolds, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 18, 1971, Ser. No. 107,003
Int. Cl. H04q 3/60
U.S. Cl. 179—18 ES **21 Claims**



A key telephone system arrangement is disclosed which comprises a plurality of station modules and line modules both of which respond to program instructions for controlling the interconnection of lines to key stations. The arrangement includes equipment directed by the program for automatically selecting an idle line in a prescribed manner from the lines terminated at a station and for connecting the selected line to the set without the necessity for depressing a line pickup key.

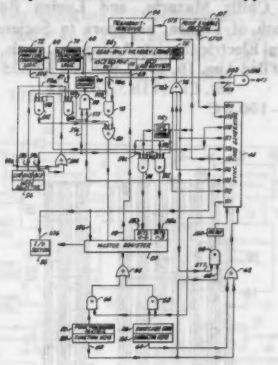
3,701,856

DATA TERMINAL SYSTEM

Carl G. Stuck, Chatsworth, and Arthur L. Wilkes, Woodland Hills, both of Calif., assignors to American Data Systems, Inc., Canoga Park, Calif.

Filed Dec. 15, 1970, Ser. No. 98,229
Int. Cl. H04l 3/00
U.S. Cl. 178—26 A **17 Claims**

An electronic apparatus and code conversion method for use in a data terminal system incorporating a modified type head electric typewriter as the data input-output device. A single timing sequence automatically controls all code converting operations of the terminal for both transmitting and receiving data. In a transmit cycle of the timing sequence, a keyboard code of the typewriter is converted to a selected one of a number of communications line codes which is then transmitted over the line. In a receive cycle of the timing sequence, the line code is then further converted into a suitable print code for operating the print or function mechanisms for the typewriter. When the terminal is receiving data, only the receive cycle of the complete timing sequence is effective. All conversions are made by means of a master register which is gated in parallel through code conversion logic gates, or a read-only memory, back into the register. The states of the master register flip-flops containing the print code determine which of a series of electromechanical actuators are activated to operate the print mechanism of the typewriter. Additionally, a method and apparatus is disclosed for generating a six bit line code from only three outputs of the read-only memory.

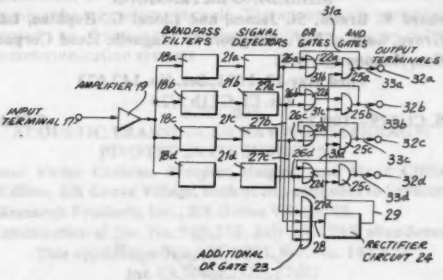


3,701,857

MULTIFREQUENCY SIGNAL RECEIVING CIRCUIT

Shogo Usuda, Yokohama; Susumu Mizusawa, Kawasaki, and Harunobu Tateno, Yokohama, all of Japan, assignors to Fujitsu Limited and Nippon Telegraph & Telephone Public Corporation

Filed June 28, 1971, Ser. No. 157,361
Claims priority, application Japan, July 3, 1970, 45/57734
Int. Cl. H04m 1/50; H04q 9/12
U.S. Cl. 179—84 VF **3 Claims**



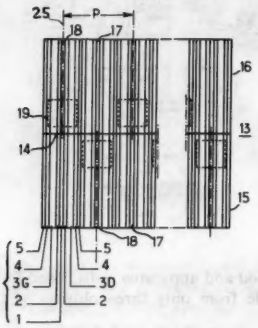
A plurality of bandpass filters equal in number to the number of frequencies of multifrequency input signals supplied thereto select the input signals. Each of a plurality of signal detectors is connected to a corresponding one of the bandpass filters and provides pulse trains corresponding to the frequencies of the signals selected by the bandpass filters. A plurality of OR gates is provided. Each of the OR gates has a first input connected to the output of a corresponding one of the signal detectors, a second input and an output. An additional OR gate has a plurality of inputs each connected to the output of a corresponding one of the signal detectors and an output for providing an output pulse train. A rectifier circuit has an input connected to the output of the additional OR gate and converts the output pulse train of the additional OR gate into continuous signals. A plurality of AND gates is provided. Each of the AND gates has a first input connected to the output of a corresponding one of the plurality of OR gates, a second input connected to the output of the rectifier circuit and an output connected to the second input of a corresponding one of the plurality of OR gates. The outputs are derived from the outputs of the AND gates.

3,701,858

MULTICHANNEL MAGNETIC HEAD UNIT OF LAMINATED CONSTRUCTION

Guy Prival, Chilly Mazarin, and Lucien Robert Prieur, Ecouen, both of France, assignors to Societe Industrielle Bull-General Electric (Societe Anonyme), Paris, France

Filed Aug. 10, 1970, Ser. No. 62,525
Int. Cl. G11b 5/16, 5/42
U.S. Cl. 179—100.2 C 8 Claims



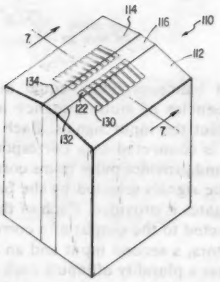
A multichannel magnetic transducer, wherein each of a plurality of aligned magnetic heads comprises a plurality of composite laminations, the composite laminations forming a magnetic circuit and electric and magnetic shields; and the process for fabrication of the transducer.

3,701,859

UNIPARTITE READ/WRITE AND/OR CENTER SECTION HOUSING FOR DUAL GAP MAGNETIC HEAD ASSEMBLIES EMPLOYING UNITARY INTERTRACK SHIELDING EXTENSIONS

Richard E. Braun, St. James, and Lionel G. Hopkins, Lake Grove, both of N.Y., assignors to Magnetic Head Corporation, Hauppauge, N.Y.

Filed May 12, 1971, Ser. No. 142,673
Int. Cl. G11b 5/26
U.S. Cl. 179—100.2 C 9 Claims



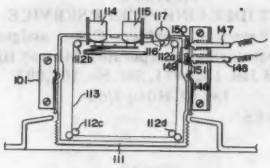
The opposed read and write head section housings of a multiple track, dual gap magnetic head assembly as well as the center section separating the same are fabricated from a nonmagnetic material having high electrical conductivity. Each of the housing and center sections include unitary portions thereof providing the total interhead and intertrack shielding.

3,701,860

MAGNETIC RECORDING AND REPRODUCING APPARATUS WITH TIME CONTROL IN CARTRIDGE

Yasutaka Iwawaki; Minoru Yoshikawa, both of Tokyo, and Yukio Usui, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 20, 1970, Ser. No. 82,384
Claims priority, application Japan, Oct. 28, 1969, 44/86256; April 1, 1970, 45/28127
Int. Cl. G11b 5/28, 23/06
U.S. Cl. 179—100.2 F 13 Claims



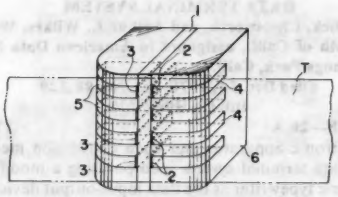
The magnetic recording and reproducing apparatus is provided with timing means which starts the time counting from the leading end of the signals to be recorded on an endless magnetic recording medium and is reset after one rotation of the endless recording medium, so that recording means may be retained in the recording mode during one rotation of the endless recording medium whereby the desired signals or informations may be recorded along the whole length of the endless recording medium during the interval from the setting to the resetting of the timing means. Part of the timing means is included in a tape cartridge.

3,701,861

MAGNETIC HEAD USING THE HALL EFFECT FOR REVERBERATION

Tsutomu Suzuki, Yokohama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 13, 1970, Ser. No. 89,431
Claims priority, application Japan, Nov. 15, 1969, 44/91105
Int. Cl. G11b 5/22, 5/28, 5/38
U.S. Cl. 179—100.2 CH 6 Claims

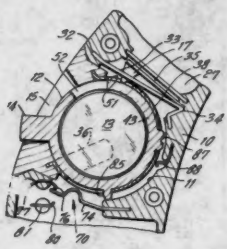


A first and second magneto-electric converting films, comprising for example, Hall elements, are vapor deposited onto a first and second highly permeable magnetic substances independently of each other. The resulting configuration is aligned so as to correspond with each track of a magnetic tape. A desired number of the magneto-electric converting films can be positioned parallel with each other. The resulting magnetic head with the multiple magneto-electric converting films is capable of producing a sustained reverberation or echo.

3,701,862
BATTERY HOLDER AND THREE-POSITION SWITCH FOR HEARING AID UNIT

Walter R. Vignini, Peekskill, N.Y., assignor to Gould Inc., Chicago, Ill.

Filed April 16, 1971, Ser. No. 134,810
Int. Cl. H01h 21/06; H04r 25/02
U.S. Cl. 179—107 H 5 Claims

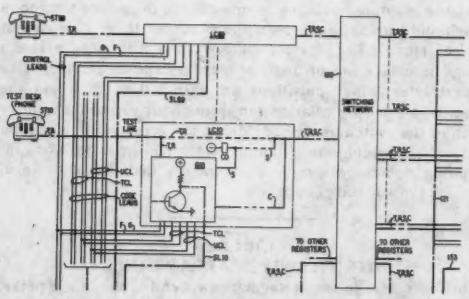


A hearing aid switch of the type shown in U.S. Pat. No. 3,475,566 issued Oct. 28, 1969, is provided with additional contact position to add an additional mode of operation without increasing the size of the switch or the structure in which it is contained. The switch has three positions: an "on" position which connects the microphone of the hearing aid unit to the amplifier, a "mid" position which connects an additional transducer in the hearing aid to the amplifier (as for instance a telephone pick-up) and an "off" position.

3,701,863
SWITCHING NETWORK TEST CIRCUIT

Dieter Moritz Paul Eisenlohr, Middletown, N.J., and Roderic Romero, Boulder, Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 11, 1970, Ser. No. 97,200
Int. Cl. H04m 3/26
U.S. Cl. 179—175.2 R 7 Claims

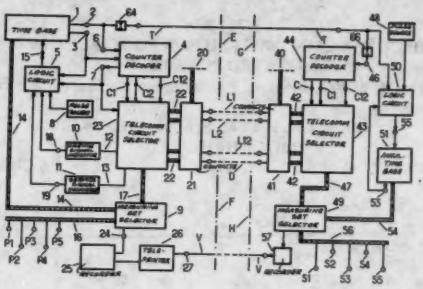


A switching system is disclosed having improved facilities for extending test calls to preselected trunk side circuits. A circuit that is to receive a test call is reserved by operating its make busy switch. This immediately makes the circuit unavailable for the reception of normal type traffic and permits it to complete the serving of any call on which it is currently engaged. A subsequently placed test call does not have to compete with other traffic and is assured of obtaining a connection to the reserved circuit.

3,701,864
AUTOMATIC MEASURING SYSTEM FOR A GROUP OF TELECOMMUNICATION CIRCUITS

Pierre L. Marotte, Conflans-Sainte-Honorine, France, assignor to Lignes Telegraphiques et Telephoniques, Paris, France

Filed May 3, 1971, Ser. No. 139,387
Claims priority, application France, May 28, 1970, 7019491
Int. Cl. H04m 1/24, 3/00
U.S. Cl. 179—175.2 R 5 Claims

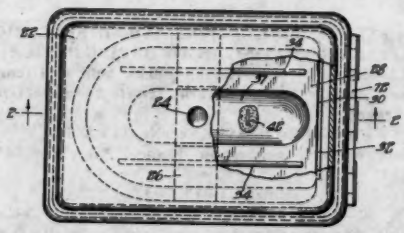


Automatic apparatus for sequentially measuring the transmission characteristics of a number of telecommunication circuits without interrupting the normal operation of the said circuits. The apparatus comprises a master system located at a first station and an auxiliary system located at a second station; each of the systems comprises a telecommunication circuit switching selector, a signal level measuring set switching selector and programmed control means for the said selectors, to automatically provide a number N of consecutive measurement cycles each comprising a number M of different measurements bothways between the two stations. The apparatus also uses a service channel, a remote control channel and a bypass circuit; the latter is used for traffic as a momentary replacement for whichever telecommunication circuit is undergoing the measurement cycle. The apparatus is particularly adapted to frequency division multiplex carrier-current telecommunication systems.

3,701,865
ACOUSTIC TRANSDUCER HAVING DIAPHRAGM PIVOTED IN ITS SURROUND

Elmer Victor Carlson, Prospect Heights, and Mead Clifford Killion, Elk Grove Village, both of Ill., assignors to Industrial Research Products, Inc., Elk Grove Village, Ill.

Continuation of Ser. No. 748,272, July 29, 1968, abandoned.
This application June 25, 1971, Ser. No. 157,023
Int. Cl. H04r 7/22, 17/02
U.S. Cl. 179—181 R 2 Claims



An electronic appliance particularly adapted for converting acoustical energy to electrical energy. The appliance includes a carrier having an elongated piezoelectric element mounted in cantilever fashion on said carrier and a hinged diaphragm

mounted on the carrier and connected to the piezoelectric element. The hinged portion of the diaphragm being spaced away from the fixed end of the piezoelectric element. An audio frequency amplification circuit is connected to the piezoelectric element. Components of the circuit are mounted on the carrier and selected components are encapsulated.

3,701,866

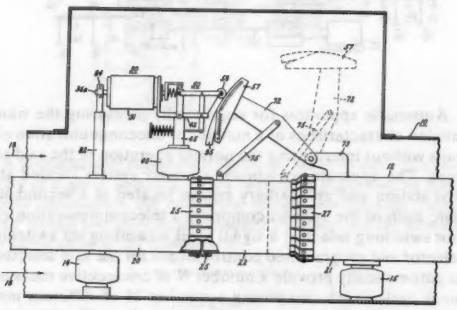
DISCONNECTING SWITCH FOR FORCE-COOLED ISOLATED PHASE BUS

Richard H. Miller, Berwyn, Pa., assignor to General Electric Company

Filed Aug. 9, 1971, Ser. No. 170,064

Int. Cl. H01h *33/66*

U.S. Cl. 200—144 B **6 Claims**



A disconnecting switch for a force-cooled isolated phase bus comprises means for interrupting magnetizing currents when the switch is opened. The interrupting means comprises a vacuum-type circuit interrupter located in the space between the bus conductor and its surrounding enclosure. The bus conductor comprises a plurality of bus sections, one of which is movable to establish a gap in the bus conductor and to actuate a cam for controlling the vacuum interrupter. When the gap in the bus conductor is established, a shunting path extends through the closed vacuum interrupter until the cam allows the vacuum interrupter to open. The cam includes an auxiliary portion movable with respect to the rest of the cam for maintaining the continuity of the shunting path through the interrupter until the interrupter opens.

3,701,867

DOUBLE PRESSURE COMPRESSED AIR ELECTRIC APPARATUS HAVING AN AIR DRYING DEVICE

Jean Claude Henry, and Gerard Billon, both of Grenoble, France, assignors to Merlin Gerin, Societe Anonyme, Grenoble, France

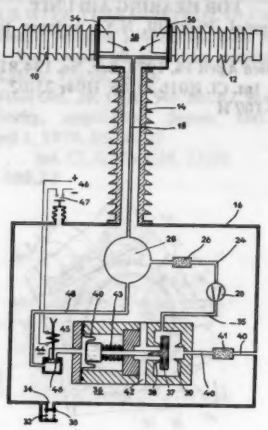
Filed Feb. 26, 1971, Ser. No. 119,255

Claims priority, application France, March 4, 1970, 7007817

Int. Cl. H01h *33/57*

U.S. Cl. 200—148 E **3 Claims**

Double pressure compressed air electric apparatus such as an air-blast circuit interrupter having a high-pressure tank and a low-pressure (exhaust) tank whereby the low-pressure is greater than the atmospheric pressure under normal operating conditions. A compressor taking air from the low-pressure tank supplies high-pressure air to the high-pressure tank. A three-way valve cooperating with an air-drying device causes said compressor to take air from the atmosphere in case the low-pressure drops to a dangerous value under the influence



of a leakage in the system. The additional quantity of air taken from the atmosphere is dried by the air-drying device.

3,701,868

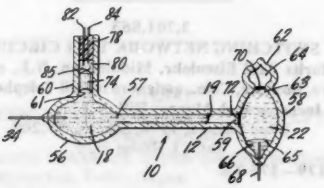
LIQUID-STATE SWITCHING DEVICE

Arsene N. Lucian, 2405 Cherry Street, Manasquan Park, N.J.

Filed May 18, 1970, Ser. No. 37,965

Int. Cl. H01h *29/00, 29/06, 29/02*

U.S. Cl. 200—192 **24 Claims**



A liquid-state switching device utilizes movement of a column of liquid, resulting from a change in surface tension of the liquid caused by electrocapillary action, to operate various switch means. The electrocapillary effect is induced across a single interface sets of single of mercury and an electrolyte or electrolytes. Filter partitions are installed to maintain the liquids in a proper relationship throughout variations in position of the switching device. Means are provided to assist the return of the column of liquids to their normal positions including a bias voltage, a permanently installed resistance, and/or pressurized gas pockets.

3,701,869

TOUCH SWITCH ARRAY PANEL

Abraham H. Jacob, Longmeadow, and John L. Franke, Chicopee, both of Mass., assignors to General Instrument Corporation, Newark, N.J.

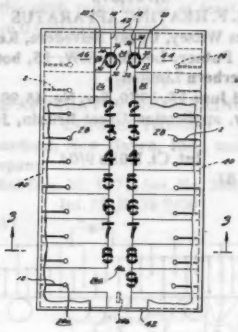
Filed April 1, 1971, Ser. No. 130,198

Int. Cl. H01h *9/16*

U.S. Cl. 200—167 R **26 Claims**

A panel for an array of touch switches is defined by separated but adjacent conductive sections mounted on a support panel, a set of first switch sections, each constituting a contact for a selected one of the number of switches involved, being arranged on the panel in a given direction and a second and elongated switch section, corresponding to a contact common to all of the switches, being arranged on the panel so as to

extend alongside but spaced from the set of first sections. The lines separating the second section from the individual first section may be in the form of indicia such as numbers, and where those indicia are of appreciable width their central portions are formed of conductive subsections which are parts of one or more of the conductive sections corresponding to the



particular switch involved. The supporting panel may be light-transmissive, while the conductive sections may be substantially opaque, and particularly when the lines of separation are in the form of indicia, illuminating means may be provided on the underside of the support panel, thereby to provide for illumination of the lines defining the indicia corresponding to the particular switch actuated at any given time.

3,701,870

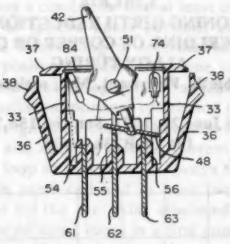
SWITCH CASE CONSTRUCTION

Richard W. Sorenson, West Hartford, Conn., assignor to Carling Electric, Inc., West Hartford, Conn.

Filed Sept. 20, 1971, Ser. No. 182,001

Int. Cl. H01h 9/18, 9/02

U.S. Cl. 200—168 C **8 Claims**



An electric switch case including modular contact terminal elements, said case being molded and having integrally formed partitions defining channels for protection of electric wiring from the electrically conductive switching elements in said case.

3,701,871

APPARATUS FOR INDUCTIVE LONGITUDINAL OR HELICAL SEAM WELDING OF TUBULAR METALLIC WORKPIECES

Hans Schafer, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

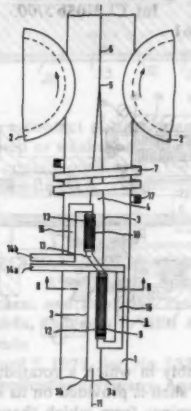
Filed March 10, 1971, Ser. No. 122,889

Claims priority, application Germany, March 13, 1970, P 20 11 915.7

Int. Cl. H05b 9/02

U.S. Cl. 219—8.5 **4 Claims**

An apparatus for inductive longitudinal or helical seam welding of tubular metallic workpieces has a tube roller device for advancing a tubular workpiece shaped from a metal band so as to have a V-shaped gap between the butt faces of the band. The roller device also applies pressure to the workpiece for joining the butt faces. The apparatus has a longitudinal inductor and a second ring-shaped inductor disposed between the longitudinal inductor and the location whereat the butt faces are joined. The longitudinal inductor is located above the V-shaped gap in partially overlapping relation to the gap



edges and has longitudinal iron yoke sheet metal members in proximity to the edges. The longitudinal inductor has two component parts one of which overlaps one of the gap edges and the other part overlaps the opposite edge of the V-shaped gap. Current supply conductors form respective windings for the two conductor parts. Each of the windings is arranged above a portion of the tube surface corresponding adjacent to the gap edge overlapped by the corresponding one of the component inductor parts.

3,701,872

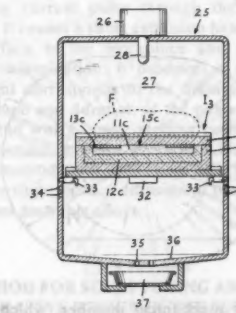
HEATING AND LOADING IMPLEMENT FOR MICROWAVE ENERGY

Melvin L. Levinson, 1 Meinger Street, Avenel, N.J.

Continuation-in-part of Ser. Nos. 470,809, July 9, 1965, abandoned, and Ser. No. 483,144, Aug. 27, 1965, abandoned. This application Feb. 9, 1968, Ser. No. 704,389

Int. Cl. H05b 9/06

U.S. Cl. 219—10.55 **11 Claims**

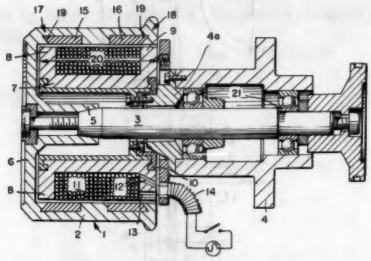


A process and an implement for converting microwave energy into heat energy which includes a body having a plurality of resistive particles therein. Upon subjecting the particles to microwave irradiation, a plurality of electric arcs are generated throughout the particles, thereby resulting in the microwave energy being converted into heat energy, and the electric arcs serving as a load for the microwave irradiation source. The implement is particularly useful with microwave ovens.

3,701,873
INDUCTIVELY HEATED GODET

Karl Bauer; Gerhard Martens, and Herbert Schiminski, all of Remscheid, Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed Sept. 17, 1970, Ser. No. 73,004
Claims priority, application Germany, Sept. 25, 1969, P 19 48 525.7
Int. Cl. H05b 5/00
U.S. Cl. 219—10.61 9 Claims

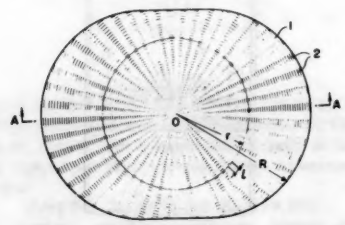


A godet assembly in which a rotated, inductively heated cylindrical godet shell is provided on its inner wall with radially recessed openings from which there extends an axially recessed opening, preferably triangular in a longitudinal section, a non-magnetic material of high electrical conductivity such as copper being advantageously filled into these recessed openings in close adherent contact with the wall surfaces of the openings, such that the openings and preferably with the embedded non-magnetic material are arranged radially and axially to maintain a uniform temperature on the outer circumferential surface of the shell.

3,701,874
APPARATUS FOR INDUCTION HARDENING OF ANTI-WEAR MECHANICAL MEMBERS

Nobuyasu Gomada, and Genzo Kosaka, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima-ken, Japan

Division of Ser. No. 754,340, Aug. 21, 1968, Pat. No. 3,647,577. This application Dec. 9, 1970, Ser. No. 96,659
Claims priority, application Japan, Aug. 30, 1967, 42/55601; Sept. 4, 1967, 42/56674
Int. Cl. H05b 5/06
U.S. Cl. 219—10.57 7 Claims

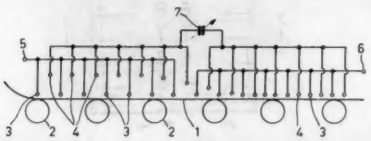


A flat, anti-wear mechanical member, which the mating member moves in sliding contact with, characterized by the fact that it is induction hardened at the surface layer thereof in such manner as to form many separate hardened layers which are distributed in the surface layer radially and concentrically with respect to the center of the surface of the member; a process for the induction hardening of a flat member, characterized by supporting an induction heating coil above a radius vector of the surface layer to be hardened of the flat member so that an alternate magnetic flux density is kept uniform throughout the surface layer by flowing a high frequency electric current intermittently through the heating coil while revolving the member, thereby to form many separate hardened layers which are distributed as mentioned above; and an apparatus for the practice of the process.

3,701,875
H. F. HEATING APPARATUS

Noel John Charles Witsey, Upper Belvedere, Kent, and James Charles Clark, Putney, London, S.W. 15, both of England, assignors to Interhern Limited

Filed June 15, 1970, Ser. No. 45,994
Claims priority, application Great Britain, June 30, 1969, 32,928/69
Int. Cl. H05b 9/04
U.S. Cl. 219—10.81 14 Claims

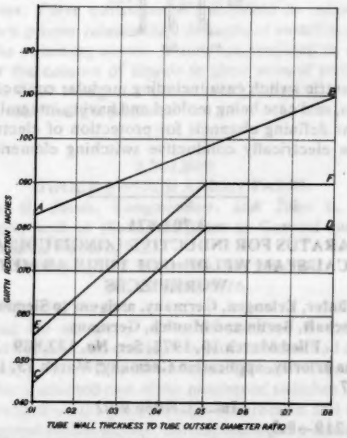


A high frequency dielectric heating apparatus with a novel stray-field platen. The platen comprises a first group of a parallel rod electrodes spaced apart in a first plane. A second group of parallel rod electrodes are alternately arranged between and in parallel with the first group of electrodes. In one region of the platen the rods of the second group are displaced in a direction away from the material to be heated, whereas in a second region of the platen the rods of the second group are closer to the material, or even in the same plane as the rods of the first group. The two regions produce different heating effects on the dielectric material. A high frequency generator is connected across adjacent electrodes. The spacing between the electrodes can be varied and the electrodes can be inclined at an angle to the lateral direction of the material to provide further variations in the heating effect across the platen.

3,701,876
PROPORTIONING GIRTH REDUCTION IN HIGH FREQUENCY WELDING OF COPPER OR COPPER BASE ALLOY TUBING

Russell L. Yungbluth, Florrisant, Mo., assignor to Olin Corporation

Filed June 21, 1971, Ser. No. 154,753
Int. Cl. B23k 31/06
U.S. Cl. 219—67 2 Claims



In welding metal strip into tubing, the strip is formed into an open tube whose edges define a longitudinally extending gap

and are brought together at a weld point. The girth of the tube at the weld point is reduced to substantially squeeze out the molten metal and form a force weld. The degree of girth reduction is proportioned to the ratio of tube wall thickness to tube outside diameter such that the girth reduction falls within the region delineated by the area ABCD, and preferably by the area CDEF in FIG. 3, for ratios up to 0.08. For ratios in excess of 0.08, the girth reduction is at least 0.080 inch and, preferably, from 0.080 to 0.090 inch.

3,701,877

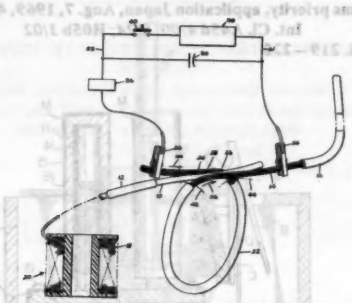
METHOD AND APPARATUS FOR MAKING ELECTRICAL CONNECTIONS

Hugh H. Richardson, New Haven, Ind., assignor to General Electric Company

Filed Dec. 20, 1971, Ser. No. 209,764

Int. Cl. B23k *9/00*

U.S. Cl. 219—97 **10 Claims**



Disclosed methods include connecting at least two conductors by establishing at least one electric current conducting circuit by forming a conductor into at least one loop so that at least one pair of spaced apart portions of the conductor, separated by an intervening or intermediate portion of the conductor, are positioned adjacent to one another; relatively positioning a preselected segment of at least one other conductor and the adjacent portions of the first conductor so that the preselected segment is located between the pair of spaced apart portions; and causing electric current to flow through the at least one loop so that an arc between the pair of spaced apart portions is produced and at least two conductors are welded together by the arc. Also disclosed are methods of forming two spaced apart loops in a first conductor, and connecting the first conductor loop portions to second and third conductors respectively by an arc between pairs of portions of each loop. Also disclosed is apparatus having a conducting loop fixture and means for causing current to flow through the loop fixture so that an arc is struck between adjacent portions of the fixture to connect at least two conductors.

3,701,878

SHEET METAL RESISTANCE WELDING PIN

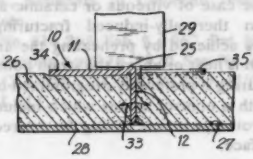
Milton Hinden, Massapequa, N.Y., and David Porat, Brookline, Mass., assignors to Duro-Dyne Corporation, Farmingdale, N.Y.

Filed April 30, 1971, Ser. No. 138,901

Int. Cl. B23k *9/00*

U.S. Cl. 219—98 **10 Claims**

A resistance welding pin formed of sheet metal adapted to attach insulation to a duct or the like. The pin includes a head portion and a shank portion and is characterized by the shank portion being folded, and including elements both substantially in the plane of and normal to the plane of the head. The portions of the shank disposed in the plane are recessed or cut away to define a weakened area to facilitate a controlled relative flexing movement between the shank and the head.



The pin includes a contact portion adapted to engage an electrode, the recessed or weakened portion being out of the circuit between the contact portion and the tip portion which is actually affixed to the duct.

3,701,879

ELECTRICAL PRECLEANING FOR STUD-WELDING TO A METAL

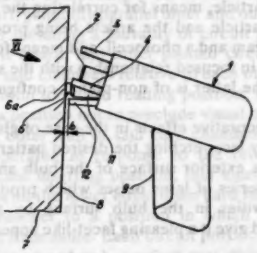
Norbert Gstohl, Eschen, and Dankmar Tauern, Triesenberg, both of Liechtenstein, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed April 7, 1971, Ser. No. 132,040

Claims priority, application Germany, April 13, 1970, P 20 17 655.0

Int. Cl. B23k *9/20*; B23p *1/08*

U.S. Cl. 219—99 **5 Claims**



The surface of a metal workpiece, to which a capacitor discharge stud welding gun is to weld a stud, is precleaned by discharging the gun while it holds a tungsten or other high-melting-point electrode against the workpiece. This passes a stud-welding current pulse through the electrode and the workpiece. It causes a short explosion heating effect that tears up the surface of the workpiece and rips away the thus loosened contamination. It produces a clean metal surface whose extent corresponds to the diameter of the electrode. The magnitude and duration of the pulse are such as to have welded a stud with a lower melting point to the metal. The tungsten electrode may be replaced with titanium, niobium, zirconium, molybdenum, etc. These have lower melting points and produce slight surface diffusion of these materials into the metal to form desirable alloys.

3,701,880

METHOD FOR SCULPTURING AN INDICIA OR DECORATIVE DESIGN IN THE SURFACE OF AN ARTICLE WITH A BEAM OF CORPUSCULAR ENERGY

Clair M. Rively, Old Bridge, and James Petro, Little Falls, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

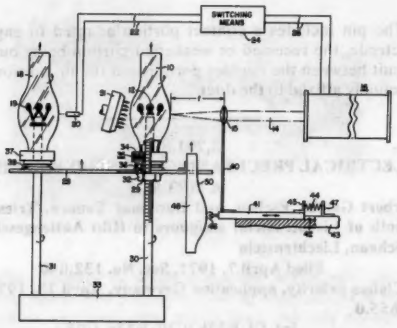
Filed Nov. 29, 1968, Ser. No. 779,995

Int. Cl. B23k *9/00*

U.S. Cl. 219—121 EB **22 Claims**

An indicia or artistic pattern, etc. is sculptured into the surface of an article, such as a glass envelope for an electric lamp

or the like, by subjecting the article to a laser or an electron beam and varying the position of the article relative to the beam at a speed and in a manner such that the beam scans the article and removes preselected surface portions thereof either by vaporization or by thermally-induced fracturing and spalling. In the case of vitreous or ceramic articles that are susceptible to thermally-induced fracturing, etching by vaporization is achieved by preheating the article to a temperature which is near or above the strain point of the material. The sculpturing is preferably programmed by pulse-operating a laser with a control means which includes a photocell that scans a prototype article having the desired indicia or pattern on its surface.



Apparatus for automatically reproducing a pattern or indicia in the surface of an article utilizing a laser source, a prototype article, means for correlating the movement of the prototype article and the article being processed relative to the laser beam and a photocell, and means for maintaining the laser beam in focused relationship with the surface of the article when the latter is of non-planar configuration is also disclosed.

Novel decorative effects in the case of glass lamp bulbs are achieved by laser-etching the desired pattern in a coating applied to the exterior surface of the bulb and by subjecting a bulb to a series of laser pulses which produce a plurality of spaced cavities in the bulb surface by thermally-induced spalling and give it a pleasing facet-like appearance.

3,701,881

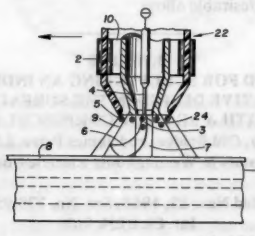
METHOD AND APPARATUS FOR WELDING METAL SHEETS

Wolfgang Rother, Meiningen; Eberhard Mordig, Potsdam; Erwin Wenzel; Dieter Gronert, both of Elsterwerda; Karl Sand, Finsterwalde; Joachim Kasbohm, Berlin; Heinz Henicke, Berlin-Altglienicke; Helmut Landmann, Werder-Havel, and Winfried Stocker, Babelsberg, all of Germany, assignors to Veb Kombinat Luft-Und Kaltetechnik, Dresden, Germany

Continuation-in-part of Ser. No. 729,700, May 16, 1968, abandoned. This application March 8, 1971, Ser. No. 122,246

Int. Cl. B23k *9/08*

U.S. Cl. 219—123 **11 Claims**



In a method of welding relatively thin metal sheets composed at least in part of steel, the steps of electromagnetically holding the sheets which are to be welded while directing to a location on a line where the welding seam is to be situated a welding arc having a hot electrically conductive core and a relatively cold electrically non-conductive sheath, providing relative motion between the sheets and the arc along a line corresponding to the seam, surrounding the arc with a wall of protective gas preventing access of the outer atmosphere to the arc, and providing a magnetic field which deflects the core away from the sheath so that the core impinges upon the line at a location on said line spaced from the location where the sheath impinges upon the line, the core and the sheath both impinging upon the sheets within the wall of protective gas, while providing for the electromagnetic holding a magnetic field which does not interfere with said deflection of the welding arc.

3,701,882

HEATING DEVICE FOR HAIR CURLERS AND CLIPS

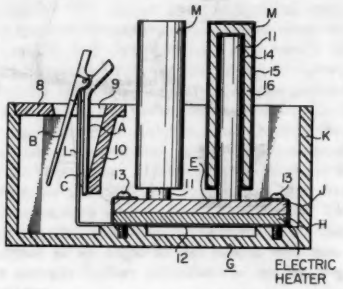
Yukio Wada, and Yoshinori Abura, both of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed July 29, 1970, Ser. No. 59,121

Claims priority, application Japan, Aug. 7, 1969, 44/62458

Int. Cl. A45d *4/00, 8/24;* **H05b** *3/02*

U.S. Cl. 219—222 **4 Claims**



A heating device for heating hair curlers and clips each having a heat storing member. The hair curlers are of the tubular type and the hair clips are of the type having a pair of synthetic resin clipping plates hinged at one end to rockably and resiliently engage each other and with one of the clipping plates being provided on its inner surface with a flat heat-storing member having a higher thermoconductivity than the clipping plates. The heating device comprises an open-top housing containing therein an electric heat generating means including a plate-shaped heating member provided with a plurality of projected pins each adapted to receive a hair curler. A flat plate-shaped member in heat exchange relation with the heat generating means is provided in the housing and adapted to be engaged by a clip. The housing is provided with a camming member for camming the heat-storing plate in the hair clip into thermoconducting contact with the flat plate-shaped member. In an alternative embodiment, each of the projected pins is integrally formed with a flat end portion adapted to be engaged by a hair clip.

3,701,883

ELECTRIC HEATER FOR COFFEE PERCOLATOR

George E. Tilp, Short Hills, N.J., assignor to Adams Industries, Union, N.J.

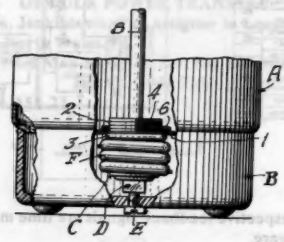
Filed Dec. 21, 1970, Ser. No. 99,757

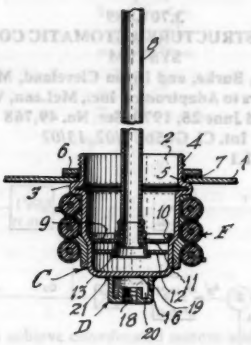
Int. Cl. H05b *3/02;* **A47j** *3/44*

U.S. Cl. 219—436 **2 Claims**

A cup-shaped well formed of sheet metal has its side wall bulged outwardly into an exterior circumferential bead and its open end exteriorly screw-threaded and extending through a hole in the bottom wall of the percolator body. The circumferential bead is resilient and has spaced apart parallel por-

tions perpendicular to the axis of the well and connected by an arcuate cross-section circumferential portion. One of the parallel portions of the bead abuts the bottom side of said wall, and a nut is screwed on said threaded end in abutment with





the top side of said wall to fasten the well on said wall, and on the exterior of the bottom of said well is a resilient sheet metal nut to receive a screw for separably securing the base of the percolator on said body.

3,701,884

METAL CAST COOKING UNIT HAVING A TEMPERATURE SENSITIVE CONTROL SENSOR

Philip F. Finney, Villa Park, Ill., assignor to Thermo-Couple Products Company, Winfield, Ill.

Division of Ser. No. 878,832, Nov. 21, 1969, Pat. No. 3,650,024. This application July 16, 1971, Ser. No. 163,318

Int. Cl. H05b *3/68*

U.S. Cl. 219—449 **8 Claims**

A cooking unit of cast metal having a temperature sensitive control sensor cast therein including a temperature sensitive resistance element constructed and arranged in a casing or sheath so that it is capable of being cast directly into the metal mass, wherein the elements of the sensor will withstand the high temperatures in the casting processes and maintain its integrity.

3,701,885

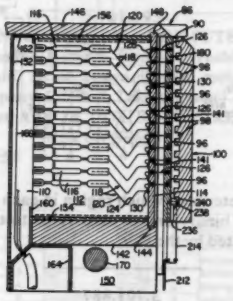
DATA COLLECTION STATION AND STATIC CARD READER THEREFOR

Richard C. Webb, Broomfield, and Robert T. Heath, Denver, both of Colo., assignors to Colorado Instruments Inc., Bloomfield, Colo.

Division of Ser. No. 614,865, Feb. 9, 1967, Pat. No. 3,553,436. This application April 16, 1970, Ser. No. 33,122

Int. Cl. G06k *7/04*; **H01h** *19/10, 43/08*

U.S. Cl. 235—61.11 C **2 Claims**



A static card reader comprising a card receiving chamber having spaced-apart, generally parallel inner and outer walls, a switching chamber including a plurality of circuit portions, a first printed circuit board, and other printed circuit boards, means for moving said chambers relative to each other from a card inserting position to a card reading position, said means being disposed in a position not to preclude visual observation of the card to the outer wall of said card chamber, and card ejection means operated in response to the return of the chambers to the card inserting position, said ejection means being engageable with the lower edge of the card for elevating it in said card chamber to a position in which it may be manually removed from same. Each circuit portion contained within the switching chamber has a first part disposed upon said first printed circuit board and a second part disposed upon one of the other printed circuit boards. Each second part of each circuit portion includes a switching contact biased to a normally closed position with a corresponding first part of said circuit portion. Each switch actuator has a corresponding switching contact, both of which are formed from a single piece of electrically conducting material. Each switch actuator is adapted to move through corresponding apertures in a punched card or to be precluded from moving through the punched card when engageable with a non-perforated portion of same. Each switching contact, upon being brought into engagement with a corresponding first part of said circuit portion, is constructed for movement across said corresponding first part of said circuit portion thereby effecting a wiping action thereacross to facilitate maintaining good electrical contact between said first and second circuit portions.

3,701,886

METHOD OF REPRESENTING DATA CODES WITH EQUAL WIDTH BAR AND DEVICE FOR READING SAME

John Earle Jones, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

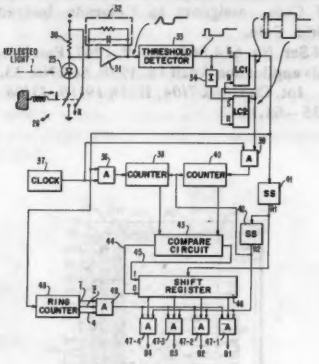
Filed Dec. 30, 1970, Ser. No. 102,722

Int. Cl. G06k *7/10*

U.S. Cl. 235—61.11 E **4 Claims**

Binary coded data is represented on a record medium by alternate regions of differing characteristics. Adjacent regions form equal width pairs, thus the total width of the representations is not dependent on code content. Machine reading of

the code is accomplished by timing a scan of the representation in the adjacent regions of the pairs of regions of alternate characteristics and comparing the scan times in both regions



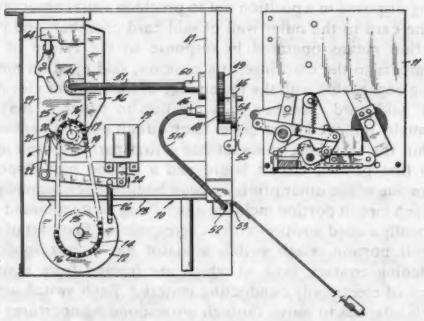
of each pair to determine which region in each pair is larger to thereby assign a binary one or zero value to the encoded binary bit represented by the pair.

3,701,887

ADMISSION PASS RECORDING AND CANCELLING MACHINE

Charles Campo, 348 North Ashland Avenue, Berkeley, Ill.

Filed Oct. 1, 1971, Ser. No. 185,757
Int. Cl. G06m *1/00*
U.S. Cl. 235—91 R **5 Claims**



Admission Pass tickets are received within a machine which is thereby activated to complete a cycle including cancelling the pass by a punch, imprinting a record of the operation upon a record sheet and registering the number of completed cycles, or inserted passes, upon a counter. Errors in machine operation are prevented through the use of positive locking mechanisms, cable driven elements and a threaded transport for the punch.

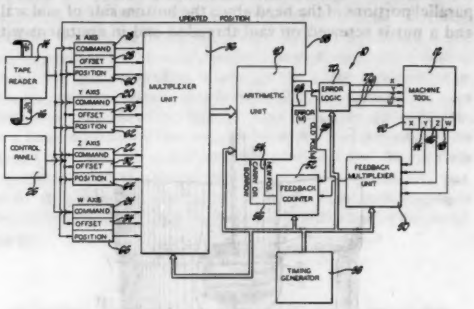
3,701,888

TIME SHARED POSITION FEEDBACK SYSTEM FOR NUMERICAL CONTROL

George H. McDaniel, Northville, Mich., assignor to The Bendix Corporation

Filed Aug. 5, 1970, Ser. No. 62,236
Int. Cl. G06f *15/46*; G05b *19/30*
U.S. Cl. 235—150.1 **11 Claims**

A numerical control system for machines having a plurality of movable elements wherein position feedback signals are generated by transforming a phase shift into a digital count indicating absolute position in either a positive or negative scale



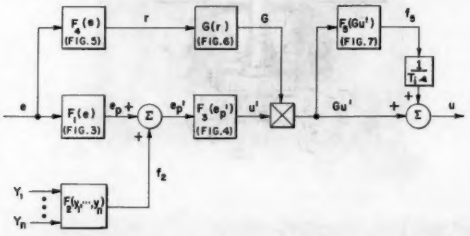
range. The respective feedback signals are time multiplexed to reduce hardware.

3,701,889

VARIABLE-STRUCTURE AUTOMATIC CONTROL SYSTEM

Roger L. Barron, Burke, and Dixon Cleveland, McLean, both of Va., assignors to Adaptronics, Inc., McLean, Va.

Filed June 25, 1970, Ser. No. 49,768
Int. Cl. G05b *17/02, 13/02*
U.S. Cl. 235—151.1 **18 Claims**



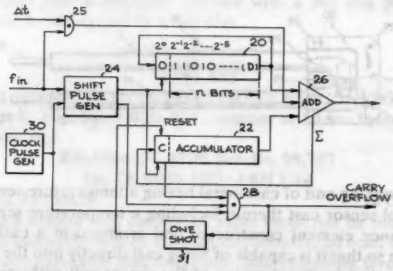
This disclosure relates to a variable-structure automatic control system of improved design wherein a measure of the instantaneous distance between the actual system operating point in a phase space, defined in terms of control error and its derivatives, and the desired equilibrium point in said space is determined and employed to adjust the controller gain.

3,701,890

DIGITAL DIFFERENTIAL ANALYZER EMPLOYING MULTIPLE OVERFLOW BITS

Ernst Dummermuth, East Cleveland, Ohio, assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Dec. 8, 1970, Ser. No. 96,120
Int. Cl. G05b *19/18*; G06j *1/02*
U.S. Cl. 235—150.31 **12 Claims**



An arrangement for increasing the frequency of the occurrence of overflow from a digital differential integrator (DDI)

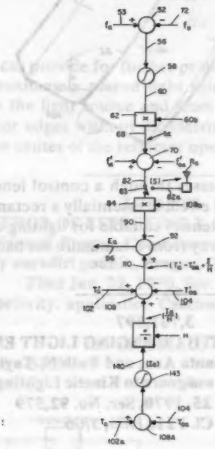
is provided by deriving multiple bits in the form of a binary number from the most significant bit section of the accumulator register of the digital differential integrator.

3,701,891

METHODS OF AN SYSTEMS FOR COORDINATED SYSTEM-WISE ENERGY BALANCING IN THE CONTROL OF BULK POWER TRANSFER

Nathan Cohn, Jenkintown, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.

Filed May 26, 1971, Ser. No. 146,980
Int. Cl. G06g 7/62
U.S. Cl. 235—151.21 **8 Claims**



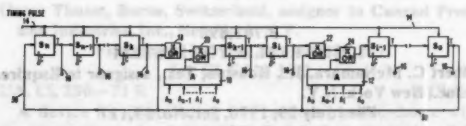
In order to achieve coordinated system-wide energy balancing in the control of bulk power transfer, the system known as the net interchange tie-line bias control is modified so as to reduce inadvertent interchange to zero while at the same time maintaining the average frequency of the interconnection as a whole at a predetermined value. This is accomplished by introducing into the control system of each area a coordinated modifying function corresponding with the quotient of the inadvertent interchange for each area measured over a span of time common to all areas divided by a constant, representative of a common corrective time period for all areas, together with an additional modifying factor representative of the time integral of frequency deviation over a predetermined time period common to all areas multiplied by a bias factor common to all areas.

3,701,892

PARITY CHECKED SHIFT REGISTER COUNTERS

William C. Carter, Ridgefield, Conn., and Peter R. Schneider, Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1970, Ser. No. 99,083
Int. Cl. G06f 11/10
U.S. Cl. 235—153 **17 Claims**



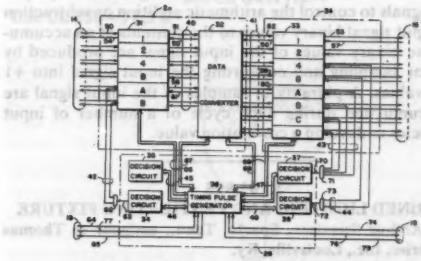
The present invention relates to a family of parity-checked shift register counters having a counting period not determined by a power of 2 wherein the power is determined by the number of shift register stages. It will be apparent that the range of the counter is effected by the number of stages but not necessarily the actual count. The family of counters is further characterized in that either odd or even parity may be designed into the output pattern of said counter, which parity will be automatically maintained for all binary-bit patterns to produce. The family of counters is further characterized in that they require only N+6 logic circuits wherein there are N shift register stages, four 2-input exclusive ORs and 2 N input AND circuits. The counters are also characterized in that they are self testing. That is, all components are tested for faults in normal operations.

3,701,893

DATA CONVERTER FOR A COMPUTER SYSTEM

Kazunori Shimaya; Katsuzo Kaneko; Yoshinori Fujio, and Yoshihiro Sato, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Aug. 23, 1971, Ser. No. 173,849
Int. Cl. G06f 3/00
U.S. Cl. 235—154 **5 Claims**



A data converting method and apparatus for converting a first data including numerical data and letter data of a first number of binary digits, such as a character unit, to a second data of a second number of binary digits, such as a byte unit, and vice versa, in response to data-conversion signals supplied from a central data processor. In the method and apparatus of the invention a first additional code is added to the letter data prior to the conversion of the data, and a predetermined number of bits of the numerical data are packed and converted to the second data after the ommission of redundant and nonrelated bits. A second additional code is added to the excess numerical data in the second data produced in the packing process. The portion of the second data which include the first additional code is converted into numerical data. The portion of the second data containing neither of the additional codes is converted to a predetermined plural number of numerical data.

3,701,894

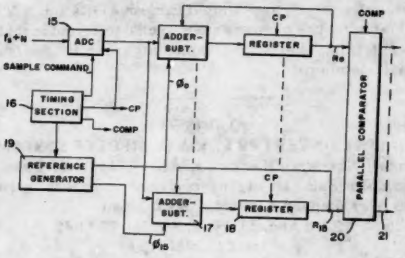
APPARATUS FOR DERIVING SYNCHRONIZING PULSES FROM PULSES IN A SINGLE CHANNEL PCM COMMUNICATIONS SYSTEM

George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of; Lucien A. Couvillon, Jr., 1891 Alpha Road, Glendale, Calif.; Christopher Carl, 303 N. Oakland Avenue, Pasadena, Calif.; Richard M. Goldstein, 5534 Rockcastle Drive, LaCanada, Calif.; Edward C. Posner, 1460 Rose Villa, and Richard R. Green, 252-D East California Street, both of Pasadena, Calif.

Filed Sept. 11, 1970, Ser. No. 70,967
Int. Cl. G06f 15/34; H04l 7/08
U.S. Cl. 235—181 **4 Claims**

A method and apparatus is disclosed for bit synchronization of a received PCM communications signal, without requiring a separate synchronization channel in the communications

signal by digital correlation of the received square-wave signal with a predetermined number of phase displaced replicas of its expected form. Each phase displaced replica is correlated with the input signal to determine which phase displaced replica produces the largest correlation signal. In carrying out the correlation of the square-wave signal with a given phased displaced replica, the two levels of the replica corresponding to



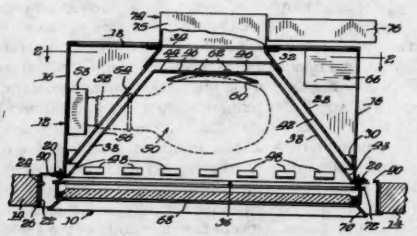
the +1 and −1 binary values of the input signal are employed as sign signals to control the arithmetic addition or subtraction of the input signal binary values to the contents of an accumulator. The binary values of the input signal are produced by means for sampling and converting the input signal into +1 and −1 values. A plurality of samples of the input signal are thus accumulated during each cycle of a number of input signal cycles to develop a correlation value.

3,701,895

COMBINED LIGHTING AND VENTILATING FIXTURE

Donald Arthur Sweetser, Sparta, Tenn., assignor to Thomas Industries, Inc., Louisville, Ky.

Filed June 30, 1971, Ser. No. 158,280
Int. Cl. F21s ; F21v *29/00*
U.S. Cl. 240—9 A **7 Claims**



A luminaire having a housing for mounting in the plenum area above a ceiling and including a reflector supported generally within the housing for reflecting light from a light source supported therein. The housing and reflector establish primary and secondary air flow paths for removing heat from the light source and from ballast means and related electrical components supported by the housing.

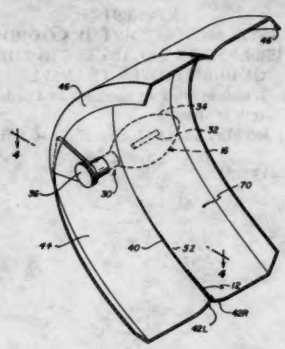
3,701,896

LUMINAIRE FOR AREA LIGHTING

James Ronald Pate, Memphis, Tenn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 94,697, Dec. 3, 1970, abandoned. This application Feb. 25, 1971, Ser. No. 118,879
Int. Cl. F21s *1/00, 3/00*; F21v *7/06*
U.S. Cl. 240—25 **10 Claims**

This luminaire includes an elongated generally horizontal light source, a multiple section generally parabolic reflector disposed behind the light source, and a refractor in front of the light source. The reflector includes two symmetrical transversely disposed paraboloid sections with the light source at the focus of both sections to produce essentially two spaced brams of reflected light. The area between the beams is illuminated



by direct light which passes through a control lens to form a third beam. The overall effect is essentially a rectangle of light of generally uniform intensity suitable for lighting a rectangular area such as a roadway from a luminaire set back from the roadway.

3,701,897

LIGHT FIXTURE WITH CHANGING LIGHT EMISSION

Davis W. Pennington, Santa Ana, and Ruth N. Taylor, Laguna Beach, both of Calif., assignors to Kinetic Lighting

Filed Nov. 25, 1970, Ser. No. 92,579
Int. Cl. F21s *1/06, 3/06*
U.S. Cl. 240—78 CF **7 Claims**

A light fixture having a light source surrounded by an opaque cylinder member having a large number of small holes therein for permitting light to pass therethrough into a set of prisms disposed in a cylinder just outside said cylinder member, and a motor to rotate said cylinder member about its axis, said prisms being elongated substantially parallel to said axis, said cylinder member being flexible to permit it to be mounted on three spokes radiating from the output rotary shaft of said motor by said spokes being received through three of said holes in said cylinder member.

3,701,898

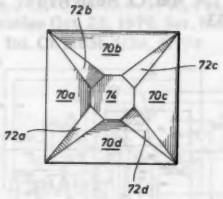
LIGHT REFLECTOR SYSTEM

Albert C. McNamara, Jr., Houston, Tex., assignor to Esquire, Inc., New York, N.Y.

Filed July 29, 1970, Ser. No. 59,117
Int. Cl. F21v *7/00*
U.S. Cl. 240—103 R **26 Claims**

A light reflector for a light source having flat sided reflecting surfaces, the corners also being reflecting surfaces, each

corner having its smallest dimension in the plane of the reflector opening and gradually widening toward the base of the reflector along lines permitting primary reflections emitting from the corners to pass directly through the reflector opening without further reflection. Additional slanted, flat side and



corner pieces provide for further primary reflection emissions. Also, approximately placed light shields screen direct emissions from the light source and from primary emissions near the reflector edges without interferring with direct emissions through the center of the reflector opening.

3,701,899

METHOD OF EFFECTING X-RAY ANALYSES

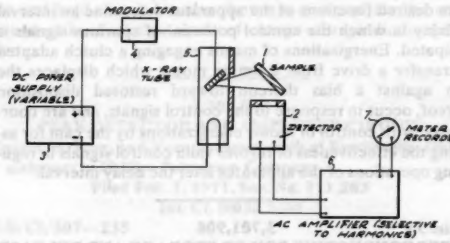
Rastislav Voparil, Prague, Czechoslovakia, assignor to Chirana Modrany narodiri podnik, Prague, Czechoslovakia

Filed Jan. 22, 1970, Ser. No. 4,978

Claims priority, application Czechoslovakia, Jan. 27, 1969, 511-69

Int. Cl. G01n *23/22*

U.S. Cl. 250—51.5 **2 Claims**



To the anode of an X-ray tube a basic direct current voltage is applied, approaching the threshold voltage required for the excitation of the analyzed element, and superimposed on this voltage is a sinusoidal alternating voltage. In the positive portions of the sinusoidal voltage the combined voltage exceeds the threshold voltage, whereas in the negative portions it lies below the same. The contents of the analyzed element is registered by a detector whose electronic evaluating device is selectively sensitive to the third or higher harmonics.

3,701,900

DEVICE FOR ILLUMINATING FLAT CARRIERS WITH MARKINGS

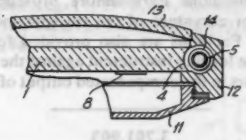
Oscar Thuler, Berne, Switzerland, assignor to Canrad Precision Industries, Inc., New York, N.Y.

Filed June 11, 1969, Ser. No. 832,267

Int. Cl. G21h *3/02*

U.S. Cl. 250—71 R **9 Claims**

A device for illuminating flat carriers in accordance with the invention, characterized by the fact that the light produced by a radioactive light source is radiated upon the carrier consisting of a transparent material, the radiated light being totally reflected by a part of a main surface of the carrier, one main face of the carrier being adapted to reflect or disperse light at areas where markings appear, or at any areas



other than those of the markings, in order to allow the light which is reflected or dispersed at these areas to escape through the other main face of the carrier.

3,701,901

PHOTOTUBES FOR SCINTILLATION DETECTOR

Albert Suhami; Benjamin Sabbah; Dan Inbar, all of Haifa; Artzi Yarom, Jerusalem, and Dan Ben-Zeev, Haifa, all of Israel, assignors to Elscint Ltd., Haifa, Israel

Filed Jan. 7, 1970, Ser. No. 1,198

Int. Cl. G01t *1/20*

U.S. Cl. 250—71.5 R **13 Claims**

The invention relates to phototubes and in particular to photo multiplier tubes such as those associated with scintillation crystals and which are provided with an array of conductor elements juxtaposed with respect to the photo cathode of the tube and which when subjected to voltage pulsing in a scanning sequence are capable of providing information concerning the spatial distribution of light incident on the photo cathode.

3,701,902

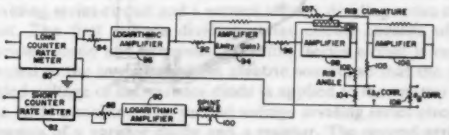
DUAL DETECTOR COMPENSATED DENSITY WALL LOGGING SYSTEM

Hermann W. Janssen, Kiel, Germany, and James F. Mooring, Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 652,115, July 10, 1967, Pat. No. 3,617,746. This application June 9, 1971, Ser. No. 151,520

Int. Cl. G01v *5/00*; G01t *1/16*

U.S. Cl. 250—83.3 R **2 Claims**



A density well logging compensation system wherein the outputs of the two detectors, which are spaced different distances from a gamma ray source, are applied to temperature compensated logarithmic amplifiers the outputs of which are compared to derive a correction signal which is employed to correct the output of one of the detectors to give true for-

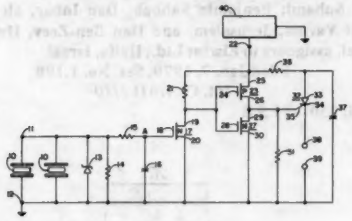
mation density. In connection with the spine and ribs plot of such a system, provision is made for adjusting both the spine angle and the rib angle so that the compensation system may be employed with density logging tools of different geometries and physical dimensions. Furthermore, provision is made for compensating for curvature of the rib with increasing mudcake thickness. Facilities are also provided for holding the source end of the logging instrument against the borehole wall to minimize errors in the compensated output of the system.

3,701,903

PIEZOELECTRIC VEHICLE IMPACT SENSOR

Donald M. Merhar, Shorewood, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 29, 1970, Ser. No. 85,123
Int. Cl. B60l *3/00*
U.S. Cl. 307—9 **6 Claims**



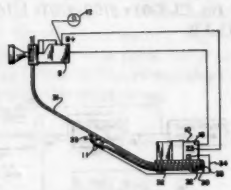
A piezoelectric vehicle impact sensor which is responsive to changes in the vehicle's velocity caused by particular impacts upon the vehicle from predetermined directions relative to the vehicle. A piezoelectric crystal which has a sensitive axis is firmly attached within the vehicle. A mass is mounted within the vehicle for compressing the crystal along the sensitive axis in response to an impact from the predetermined directions, thereby causing the crystal to generate a voltage as a function of the impact. A voltage limiter limits the amplitude of the voltage to a predetermined level. An integrating circuit receives the voltage from the voltage limiter and produces a signal which is an integral of that voltage. A detecting circuit is responsive to a particular value of the signal from the integrating circuit for activating an apparatus such as an inflatable passenger restraining system.

3,701,904

VEHICLE HEADLIGHT SWITCH WITH TIME DELAY

Donald J. Gardner, 3741 Penbrook Lane, Flint, Mich.

Filed June 9, 1970, Ser. No. 44,685
Int. Cl. B60g *1/04*
U.S. Cl. 307—10 BP **5 Claims**



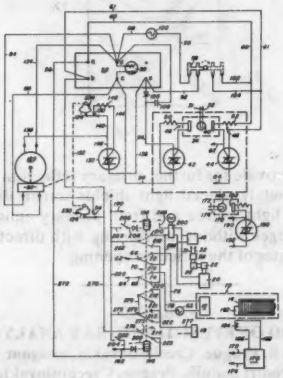
A control system is provided for the manual activation of a time delay circuit which will cause the head lamps of a vehicle to be energized for a predetermined length of time. It incorporates a head lamp control relay controlled by a transistor switch incorporating an RC time constant to provide the desired delay and a momentary on switch to activate the system. The momentary on switch may function in cooperation with the dome lamp switch.

3,701,905

STATIC STOPPER

Leland W. Sprinkle, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Interior

Filed Oct. 27, 1971, Ser. No. 192,901
Int. Cl. H02p *1/16*
U.S. Cl. 307—133 **5 Claims**



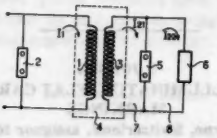
A time regulated switching device is made applicable to screen apparatus operation control signals so as to prevent accidental control of the apparatus by spurious signals randomly interposed with already sequentially-generated control signals. A timed cam control of switch activity in the device directed by the control signals before they are effective to initiate desired functions of the apparatus determine an interval of delay in which the control potential of spurious signals is dissipated. Energizations of means engaging a clutch adapted to transfer a drive from a timing motor which displaces the cam against a bias thereon toward restored disposition thereof, occur in response to the control signals, and are coordinated with control of motor energizations by the cam for assuring the effectiveness of further valid control signals in regulating operations of the apparatus after the delay interval.

3,701,906

SUPERCONDUCTIVE POWER STORAGE AND RELEASE DEVICE

Jean Denel, Paris; Jacques Maldy, Wissous, and Enrique Santa-Maria, Villiers-sur-Orge, all of France, assignors to Compagnie Generale D'Electricite, Paris, France

Filed Oct. 1, 1971, Ser. No. 185,620
Claims priority, application France, Oct. 1, 1970, 7035536
Int. Cl. G11c *11/44*
U.S. Cl. 307—149 **8 Claims**

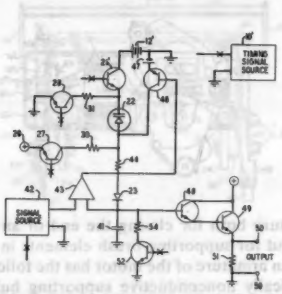


A device for rapidly transferring energy from a superconductive storage device to a utilization device. A first switch is coupled across the superconductive device and a second switch is coupled across a secondary of a transformer comprising the superconductive device and the secondary. The utilization device is coupled across the secondary in parallel with the second switch.

3,701,907
CIRCUIT EMPLOYING CHARGE STORAGE DIODE IN FAST DISCHARGE MODE

Sigurd G. Waaben, Princeton, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Division of Ser. No. 781,167, Dec. 4, 1968, Pat. No. 3,626,213. This application Oct. 23, 1970, Ser. No. 83,634
Int. Cl. H03k *5/20, 17/74*
U.S. Cl. 307—235 5 Claims

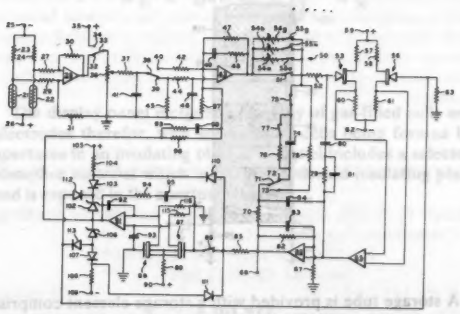


The output of a charge storage diode in its reverse conducting spike discharge mode utilized to impose a fixed supplemental charge on a capacitor in each of plural sample and hold circuits just after a signal sample charge has been placed in the capacitor. Isolating diodes couple a common signal source to the respective capacitors, and each diode is reversely biased by the total of the sample and supplemental charges in its holding capacitor to prevent crosstalk among the various holding capacitors. A memory drive circuit and a single sample and hold circuit are also shown to demonstrate the mentioned spike discharge mode of charge storage diode operation.

3,701,908
PEAK DETECTOR AND AMPLIFIER CIRCUIT

Harold M. Neer, and Vern A. Street, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Feb. 1, 1971, Ser. No. 111,203
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 9 Claims

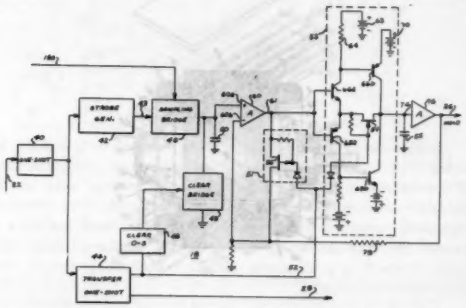


An output circuit is provided for use with a chromatographic analyzer. The analyzer output is amplified and passed through an attenuation network to an integrator. The output signal from the integrator is applied selectively through an amplifier to the input of the first amplifier to provide an automatic zero circuit. Additional differentiating, peak reading and storage circuits are selectively connected to the output of the integrator.

3,701,909
PEAK AND HOLD SYSTEM

Walter V. Holmes, Morrisville, Pa., and John F. Renz, Cinnaminson, N.J., assignors to Computer Test Corporation

Filed Aug. 17, 1970, Ser. No. 64,310
Int. Cl. G11c *11/34*; H03k *17/18*
U.S. Cl. 307—246 15 Claims

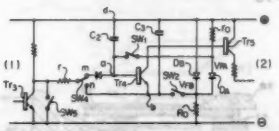


A system and method for detecting the time of maximum amplitude of a bipolar unknown signal and generating a trigger pulse referenced to that time. The unknown signal is sampled at the time of the trigger pulse and the resultant sampled value is stored in short term storage. The short term stored value is transferred by control logic to long term storage where it remains available to be analyzed.

3,701,910
COMPENSATING CIRCUIT FOR VOLTAGE AND TEMPERATURE IN A TRANSISTOR CIRCUIT

Takayoshi Sato, Tokyo, Japan, assignor to Kabushikikaisha COPAL, Tokyo, Japan

Filed Nov. 19, 1970, Ser. No. 90,939
Claims priority, application Japan, Nov. 22, 1969, 44/93724; Dec. 26, 1969, 45/1617
Int. Cl. H03k *17/00*
U.S. Cl. 307—255 2 Claims

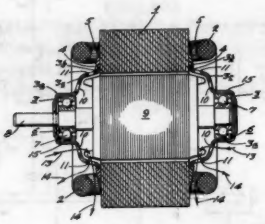


Compensating circuit for voltage and temperature in a transistor circuit of complementary connection having an NPN type transistor and a PNP type transistor with its base connected to the collector of the NPN transistor. The voltage of the base of the NPN transistor is compared with the voltage of the emitter thereof so as to trigger the same so that the PNP transistor is triggered. The circuit comprises a first voltage dividing series circuit and a second voltage dividing series circuit. The first voltage dividing series circuit consists of a varistor diode and a resistor. The first series circuit is connected to the terminals of the electric source, so that the divided voltage of the varistor diode is applied to the emitter of the NPN transistor. The second voltage dividing series circuit consists of a varistor diode and a resistor. The second series circuit is connected to the terminals of the varistor diode of the first series circuit so that the divided voltage of the varistor diode of the second series circuit is applied between the base and the emitter of the NPN transistor. The variation in the voltage of the varistor diode in each of the first and the second series circuit due to the variation in the voltage of the electric source as well as the variation in the temperature is made small thereby permitting the NPN transistor to be stabilized.

3,701,911
MOTOR BEARING SUPPORT AND COOLING MEANS

Stig Lennart Hallerback, Vastra Frolunda, Sweden, assignor to SKF Industrial Trading and Development Company N.V., Amsterdam, Netherlands

Filed May 20, 1971, Ser. No. 145,450
Int. Cl. H02k 9/04
U.S. Cl. 310—60 10 Claims

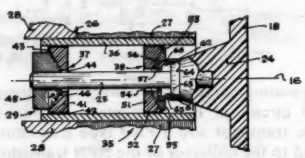


A bearing support for apparatus having a rotor mounted on a shaft and a stator having windings comprising a cup-shaped member consisting of an inner section for supporting rotor bearing means and an outer section secured at its outer periphery to the stator at a point radially inwardly of the windings and spaced from said rotor to define a rotor chamber, means defining a plurality of openings in the outer section of the cup-shaped member to provide an effectively cooling air flow to and from the rotor chamber upon relative rotation of the rotor and stator, the openings being of a configuration and orientation to direct the air over the windings and bearing means.

3,701,912
FAN MOTOR BEARING ASSEMBLY

Gerhard Schulze, Eichendorffweg 18, D-8021 Hohenschaeftlarn, Germany

Filed Nov. 8, 1971, Ser. No. 196,424
Int. Cl. H02k 5/16
U.S. Cl. 310—90 8 Claims

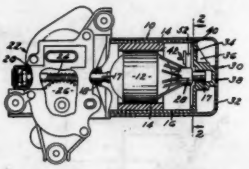


A bearing assembly for mounting a fan motor rotor on a stationary cantilever shaft; the bearing assembly includes a rotor bearing member encompassing the shaft and having two oppositely facing bearing surfaces of conical or spherical configuration. A first stator bearing member, affixed to the shaft, engages one rotor bearing surface. A floating stator bearing member engages the other rotor bearing surface. The stator bearing members have bearing surfaces complementary to the rotor bearing surfaces, and at least one surface of each mating pair constitutes a self-lubricating surface. A resilient cup or other simple resilient biasing means, connected to the floating stator bearing member, biases the assembly to maintain both sets of bearing surfaces in continuous engagement regardless of changes and imbalance in axial thrust, bearing wear, and thermal expansion; the biasing means also restrains the floating bearing member against rotation.

3,701,913
STRUCTURE FOR CLOSING A MOTOR HOUSING AND FOR SUPPORTING BRUSH ELEMENTS MAKING CONTACT WITH THE ARMATURE THEREOF

Eugene C. Cagnon, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed July 14, 1969, Ser. No. 841,696
Int. Cl. H01r 39/38
U.S. Cl. 310—247 4 Claims

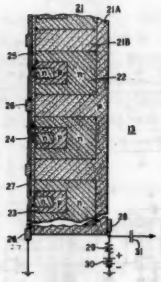


A structure both for closing the end of an electric motor housing and for supporting brush elements in electrical contact with an armature of the motor has the following elements. An electrically nonconductive supporting hub which closes the end of the motor is formed which has a surface lying in a plane generally perpendicular to the central axis of the hub. A plurality of brush boxes are also integrally formed which extend upwardly from the hub's surface. The brush boxes define a continuous enclosure for receiving therewithin brushes of electrically conductive material. Electrical connectors are provided for connecting the brushes through the supporting hub to the exterior of the motor. Springs are also provided for each of the brushes to bias the associated brush along its associated brush box and into engagement with the motor armature.

3,701,914
STORAGE TUBE WITH ARRAY ON PNPN DIODES

Gilbert Frank Amelio, Basking Ridge, and George Elwood Smith, Murray Hill, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed March 3, 1970, Ser. No. 16,197
Int. Cl. H01j 31/28, 31/38; H01l 11/10
U.S. Cl. 313—66 2 Claims

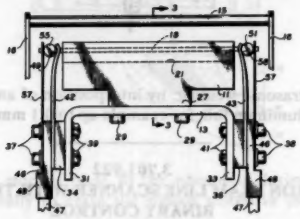


A storage tube is provided with a storage element comprising a plurality of PNPN bistable photodiodes which share a common terminal P-type zone, the other zones being discrete. A first electrode makes low resistance connection to the common P-type zone and a second electrode makes electrical connection to the discrete terminal N-type zones by way of individual film resistors. The radiation pattern to be stored is made incident on the P-type surface and an electron beam scans the opposite surface. The operating potentials are such that the beam makes impact only on those N-type terminal zones associated with photodiodes triggered to the low resistance state by the incident radiation.

3,701,915
ELECTRON BEAM GUN

Kazumi N. Tsujimoto, El Cerrito, Calif., assignor to Air Reduction Company Incorporated, New York, N.Y.

Filed Jan. 4, 1971, Ser. No. 103,684
Int. Cl. H01j 29/46, 1/00, 29/56
U.S. Cl. 313—82 3 Claims

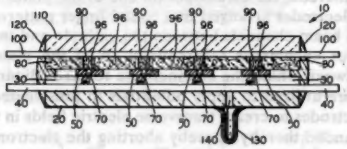


An electron beam gun is described wherein a pair of elongated filaments are placed parallel to one another in the elongated channel of a focusing electrode.

3,701,916
DISPLAY PANEL HAVING GAS-FILLED CELLS UTILIZING PHOSPHOR MATERIALS

David Glaser, Green Brook, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 1, 1971, Ser. No. 111,310
Int. Cl. H01j 1/62
U.S. Cl. 313—108 B 11 Claims



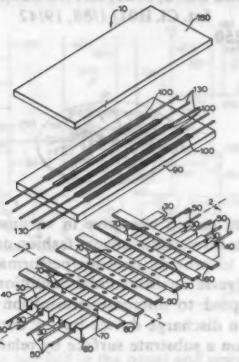
The display panel includes a plurality of gas-filled cells and electrodes therefor, with some of the cells being formed by apertures in an insulating plate. The panel includes a selected phosphor material which is integral with said insulating plate and is exposed in the apertures therein.

3,701,917
DISPLAY PANEL HAVING A PLURALITY OF ARRAYS OF GAS-FILLED CELLS

George A. Kupsky, Milford, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 880,025, Nov. 26, 1969, abandoned.
This application May 10, 1971, Ser. No. 141,724
Int. Cl. H01j 61/06, 61/30
U.S. Cl. 313—188 8 Claims

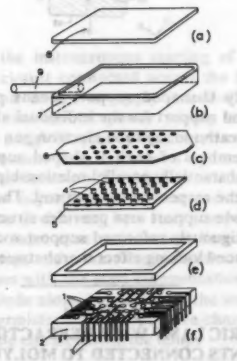
A display panel includes a slotted structure for providing gas communication paths, the slotted structure comprising insulating plates having a plurality of parallel slots which extend completely through one of the plates, and along substantially the entire length thereof, electrodes are disposed between the plates and above and below the plates to form two layers of cells.



3,701,918
GASEOUS-FLOW, DISCHARGE DISPLAY DEVICE WITH AN ARRAY OF HOLLOW CATHODES

David Henry Odhams Allen, East Grinstead, Sussex; Raymond Frederick Hall, Crawley, Sussex, and George Frederick Weston, Merstham, Surray, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 766,525, Oct. 10, 1968, abandoned.
This application Jan. 22, 1971, Ser. No. 108,965
Claims priority, application Great Britain, Aug. 29, 1968, 46,406/68
Int. Cl. H01j 61/06, 61/64
U.S. Cl. 313—209 2 Claims



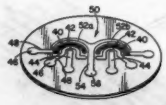
An electrical display device employing an array of electrically conductive dot cathodes and an anode or anodes for cooperating therewith to define an array of glow discharge paths, the dimensions and relative locations of the cathodes and anodes and pressure and composition of the atmosphere being such that only a negative flow discharge is produced and the positive column is suppressed.

3,701,919

INTEGRATED VACUUM CIRCUITS

Donovan V. Geppert, Sunnyvale, Calif., assignor to Electron Emission Systems, Inc., Tucson, Ariz.

Filed Oct. 6, 1969, Ser. No. 864,031
Int. Cl. H01j *1/88, 19/42*
U.S. Cl. 313—250 15 Claims



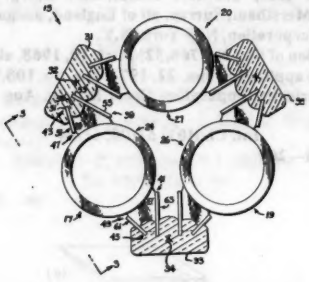
An integrated circuit operative in vacuum and having all circuit elements formed in coplanar fashion on a single surface of a substrate to provide superior performance even in the presence of adverse environmental conditions. The circuit is especially adapted to microminiaturization and includes a unique electron discharge device having coplanar electrodes easily formed on a substrate surface by relatively simple film deposition techniques.

3,701,920

CATHODE RAY TUBE ELECTRODE ELEMENT

Louis R. Wanner, Seneca Falls, N.Y., assignor to Sylvania Electric Products Inc.

Division of Ser. No. 51,761, July 2, 1970, Pat. No. 3,659,134.
This application Jan. 19, 1972, Ser. No. 218,968
Int. Cl. H01j *1/88, 19/42;* H01k *1/18*
U.S. Cl. 313—292 5 Claims



Substantially U-shaped support means provide improved positioning and support for the individual electrode elements comprising a cathode ray tube electron gun assembly. The related side members of each U-shaped support channel are oriented in substantially parallel relationship with the longitudinal axis of the respective support rod. The discrete shaping of the electrode support arm provides structural cooperation with the contiguously reformed support rod material to provide an enhanced locking effect therebetween.

3,701,921

ELECTRIC LAMP WITH REFRACTORY METAL COMPONENTS CONNECTED TO MOLYBDENUM FOILS

Hans Wiedenmann, Heidenheim, Germany, assignor to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH, Munich, Germany

Filed Oct. 21, 1970, Ser. No. 82,685
Claims priority, application Germany, Nov. 20, 1969, P 19 56 484.2
Int. Cl. H1j *5/00*
U.S. Cl. 313—332 6 Claims

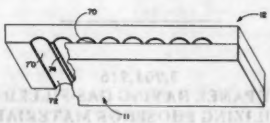
An envelope of glass of high silica content, such as quartz glass or similar, has molybdenum foils pinch-sealed into the lamp envelope. Lamp components of refractory material, such as molybdenum, or tungsten are welded to the foils, for example by ultrasonic welding, by interposition of an intermediate layer of aluminum foil, for example up to 0.1 mm. thickness.

3,701,922

ELECTRON BEAM LINE SCANNER WITH TRANSVERSE BINARY CONTROL

Richard A. Honzik, La Palma, Calif., assignor to Northrop Corporation, Beverly Hills, Calif.

Filed Aug. 31, 1970, Ser. No. 68,326
Int. Cl. H01j *31/26*
U.S. Cl. 315—10 20 Claims



A pair of dielectric plates have control electrodes formed on oppositely positioned broad surfaces thereof, there being an evacuated narrow space formed between such surfaces to provide paths for an electron beam between a cathode and a target. Such surfaces have conductive control electrodes formed thereon, the electrodes on one of the plates including paired electrodes arranged in a coded finger pattern defining electron beam channels between the cathode and target. The electrodes encompass substantially all of the plate surface area between which the channels are formed. Binary control signals are utilized to apply potentials to preselected ones of said electrodes to create transverse electric fields in the channels bounded thereby, thereby aborting the electron beam in such channels. The beam is in this manner permitted to pass through channels of the scanner in which there are no transverse fields so as to excite the target portions located by these channels.

3,701,923

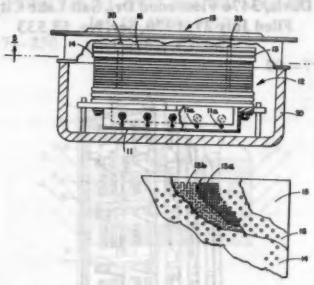
INHERENT STORAGE FOR CHARGED PARTICLE BEAM SCANNER

Walter F. Goede, Harbor City, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Sept. 9, 1971, Ser. No. 179,092
Int. Cl. H01j *29/41*
U.S. Cl. 315—12 11 Claims

The output of an area of a charged particle source such as an electron source passes from this source through a plurality of control plates to a target which may comprise a phosphor target plate. The control plates have a plurality of apertures formed therein which are aligned with each other from plate to plate to define channels between the electron source and the target. The target is scanned by means of digital control signals which are applied to the control plates. A collector plate and a storage plate are interposed between the control plates and the phosphor target in that order. Control signals are successively applied to the various plates to first write

signals onto the storage plate in accordance with the digital excitation of the control plates, to then apply the signals



stored in the storage plate to the phosphor during a flood mode, and finally to erase the signals stored in the storage plate.

3,701,924

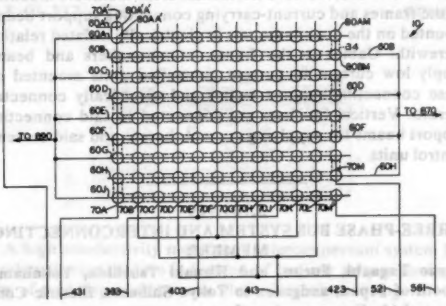
SYSTEM FOR OPERATING A DISPLAY PANEL

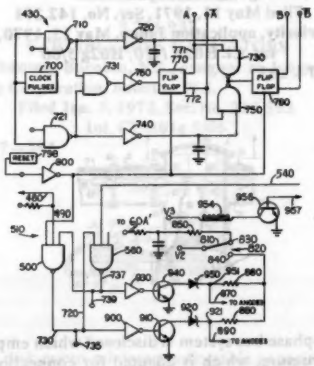
David Glaser, Green Brook, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 17, 1970, Ser. No. 64,227

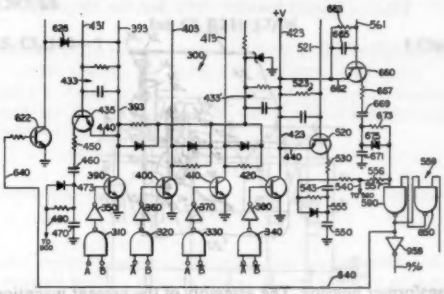
Int. Cl. H03k *23/18*

U.S. Cl. 315—84.6 **8 Claims**





A circuit for scanning a display panel including means for automatically progressing from cell to cell along a row, sensing the arrival at the end of a row and automatically switching to the next row and causing the scanning operation to proceed in the opposite direction to the end of this next row, and thus automatically scanning from row to row and



finally sensing the last cell in the panel and resetting the panel and circuit for the start of another complete scanning cycle.

3,701,925

INSTANTANEOUS STARTING SYSTEM FOR DISCHARGE LAMP

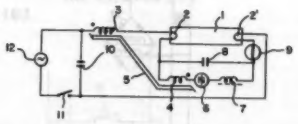
Shunichi Nozawa, Akashi; Hisashi Kuroi; Masamichi Hatada, both of Kyoto, and Shunsaku Fukuyama, Amagasaki, all of Japan, assignors to Blackwell Electronics Ind. Co., Ltd., Shimogyo-ku, Kyoto, Japan

Filed Feb. 23, 1971, Ser. No. 117,935

Claims priority, application Japan, Feb. 28, 1970, 45/17365; April 22, 1970, 45/34997; Sept. 30, 1970, 45/86091; Sept. 30, 1970, 45/86092; Sept. 30, 1970, 45/86093

Int. Cl. H05b *39/02, 41/14*

U.S. Cl. 315—101 **17 Claims**



A system for the instantaneous starting of a fluorescent lamp includes a circuit connected across the lamp having a start compensation device to apply a half-sinusoidal wave derived from a commercial power supply and oscillatory means to provide a high frequency oscillation across the lamp. The oscillatory means may include a symmetrical silicon switch (SSS) or an inversely blocking two-terminal thyristor and an oscillation adjusting inductance and capacitor. The start compensation device may be a start compensation winding wound on the same core as a current limiting winding in series with the lamp, and a start compensation diode may be connected in series with the start compensation winding. Alternatively, the diode alone may serve as the start compensation device. A thermistor having a positive characteristic may be connected in the circuit across the lamp.

3,701,926

INTERNAL FUSE FOR TRANSFORMER

Jerry Risk, Versailles, Ky., assignor to Kuhlman Corporation, Troy, Mich.

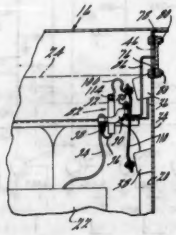
Filed Jan. 20, 1972, Ser. No. 219,388

Int. Cl. H02h *7/04*

U.S. Cl. 317—15 **10 Claims**

A fuse holder assembly which is particularly adapted to be utilized in conjunction with the protection system for the pri-

mary side of a transformer assembly wherein the fuse holder is mounted on a plate, the plate being supported on the face of the transformer casing. The fuse holder extends from the plate through an aperture in the transformer housing such that the fuse is supported below the level of cooling fluid within the



transformer housing. The assembly of the present invention is suitable for use in connection with any type of fuse and also the transformer assembly includes a protective cover which encloses the area on which the plate is mounted to render the system tamper-proof.

3,701,927

LOCATION OF FAULTS IN CABLES

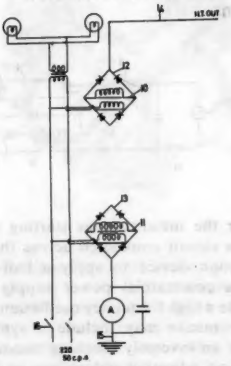
Frank Edward Jenkinson, Johannesburg, Republic of South Africa, assignor to Patented Devices (Proprietory) Limited, Reuven, Johannesburg, Republic of South Africa

Filed June 11, 1971, Ser. No. 152,158

Claims priority, application South Africa, June 11, 1970, 3973

Int. Cl. G01r *31/08*

U.S. Cl. 317—16 **2 Claims**



Apparatus for reducing the resistance of a high resistance fault between two cores or between one core and the sheath of an electrical cable comprising a first transformer having a high open circuit voltage rating and a low short circuit current rating and a second transformer having a low open circuit voltage rating and a high short circuit current rating. The two transformers are connected in series and across the two faulty cores or between the faulty and the sheath and their respective primary windings are energized. Initially the sum of the two secondary voltages will be applied to the cable to reduce the fault resistance. This will cause the fault current to increase. When the fault current increases beyond the short circuit current rating of the first transformer this transformer will zero leaving only the second transformer to burn the fault down to a point where conventional fault locating apparatus can be employed to locate the fault.

3,701,928

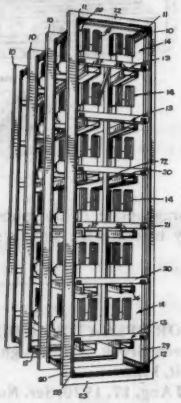
FRAMEWORK FOR SUPPORTING AIR COOLED ELECTRICAL AND ELECTRONIC EQUIPMENT

Ariel Rual Davis, 3476 Fleetwood Dr., Salt Lake City, Utah

Filed July 27, 1970, Ser. No. 58,533

Int. Cl. H02b *1/04*

U.S. Cl. 317—99 **11 Claims**



A framework comprising a plurality of vertical rectangular open frames interconnected at the top and bottom by tie beams and intermediately by a plurality of vertically spaced shelves. The shelves have horizontal cross members mounted on the frames and current-carrying connecting support beams mounted on the cross members in electrically isolated relation therewith. Cables in the frame, crossmembers and beams supply low current to current controlled units mounted on these connecting support beams and electrically connected thereto. Vertical bus bars are connected to said connecting support beams for supplying current thereto and said current-control units.

3,701,929

THREE-PHASE BUS SYSTEM AND INTERCONNECTING MEMBER

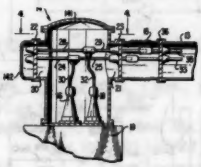
Kazuo Taguchi, Fuchu, and Hiroaki Tsuchida, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Company Ltd., Kanagawa-ken, Japan

Filed May 11, 1971, Ser. No. 142,271

Claims priority, application Japan, May 13, 1970, 45/40125

Int. Cl. H02b *1/20*; H02g *5/00*

U.S. Cl. 317—103 **3 Claims**



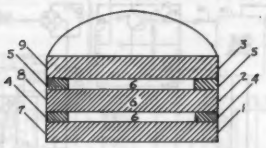
A three-phase bus system is disclosed which employs a connecting structure, which is adapted for connecting the lead-out bushings of a three-phase power transformer to three-phase bus conductors. The connecting structure includes a T-shaped member having two arms and a leg. The two arms of the T-shaped member are slidably supported in the bus conductors. A bent connecting conductor is provided for connecting a bushing terminal to the leg of the T-shaped member in a slidable and rotatable fashion whereby freedom of connection during assembly can be readily obtained.

3,701,930

ELECTROLYTIC TRANSISTOR WITH COLLECTOR IN BASE-EMITTER CURRENT PATH

Joseph Tami, Jr., 7725 Apperson Street, Tujunga, Calif.

Filed Feb. 11, 1971, Ser. No. 114,627
Int. Cl. H01g 9/00
U.S. Cl. 317—230 5 Claims



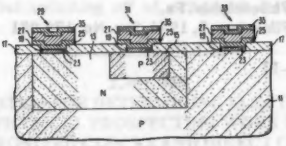
An improved self-healing electrolytic transistor using electrode materials and solutions similar to those used in electrolytic capacitors; in which; the collector is placed within the emitter to base current path; also having means for varying the internal input resistance; and which is capable of high power output.

3,701,931

GOLD TANTALUM-NITROGEN HIGH CONDUCTIVITY METALLURGY

Martin Revitz, Poughkeepsie, and James M. Thompson, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 6, 1971, Ser. No. 140,891
Int. Cl. H01l 5/00
U.S. Cl. 317—234 R 5 Claims



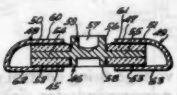
A high conductivity metallurgy interconnection system for semiconductor devices is formed of laminar stripes having a film of gold disposed between films of tantalum-nitrogen.

3,701,932

VARIABLE DISK CAPACITORS

John E. Johanson, Boonton, N.J., assignor to Johanson Manufacturing Corporation, Boonton, N.J.

Filed Jan. 3, 1972, Ser. No. 214,593
Int. Cl. H01g 5/06
U.S. Cl. 317—254 15 Claims



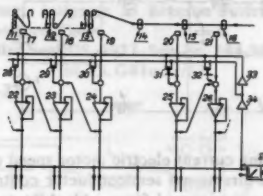
Variable disk micro-miniature adjustable capacitors for use in microwave electronic circuitry and comprising a pair of ceramic disks having electrically-conductive outer surface layer portions and interposed by an electrically-conductive rotor plate all held in face-to-face, coaxially-stacked relation by conductive spring clamp means electrically connected with the electrically-conductive layers of the ceramic disks are described.

3,701,933

DEVICE FOR PAPER MACHINES

Sture Andersson, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Aug. 13, 1969, Ser. No. 849,786
Claims priority, application Sweden, Aug. 22, 1968, 11343/68
Int. Cl. B21b 37/06
U.S. Cl. 318—7 1 Claim



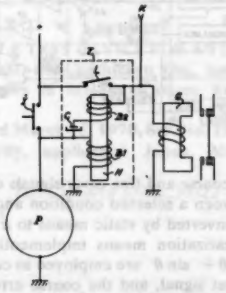
A device for controlling a paper web with at least two sections, each section being provided with its own driving member and amplifier for the speed control. A measuring means is arranged in this speed control to measure the position of the paper web and the output signal of said means is supplied to a summation amplifier. Said summation amplifiers are cascade-connected and their input sides are provided with emitters for process signals and potentiometers which are fed from a ramp voltage proportional to the speed of the machine and common for the device.

3,701,934

CONTROL SYSTEM FOR A WINDSHIELD WIPER AND CLEANER UNIT

Charles Guidicelli, Bagnolet, France, assignor to Societe Anonyme STOP, St. Oven, France

Filed May 4, 1971, Ser. No. 140,039
Claims priority, application France, May 15, 1970, 7017815
Int. Cl. B60s 1/02
U.S. Cl. 318—102 1 Claim

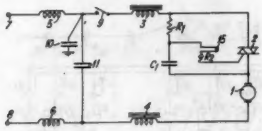


The invention relates to a control system for a vehicle windshield-wiper and cleaner allowing the windshield-wiper and the windshield-cleaner to be energized simultaneously and to be de-energized one after the other. In this system, the operation of the windshield-wiper is controlled through the contact of an electromagnetic relay having a first coil connected across the motor actuating the pump of the windshield-cleaner, and a second coil connected in series with a capacitor across the control switch of the pump. When the control switch is closed, the relay is energized and the capacitor is short-circuited. When the control switch is opened, the current charging the capacitor flows through the second coil of the relay and causes a delay to the release of this relay, hence a delay to the deenergization of the windshield-wiper. With this arrangement, a delay of substantial and constant duration can be obtained with a capacitor of relatively small size.

3,701,935
CIRCUIT FOR FOOD MIXER

Arthur A. Collie, Hayling Island, England, assignor to Kenwood Manufacturing (Working) Limited, Hampshire, England

Continuation of Ser. No. 812,002, April 1, 1969, abandoned. This application June 23, 1971, Ser. No. 156,038
Int. Cl. H02p *5/08*
U.S. Cl. 318—325 **4 Claims**

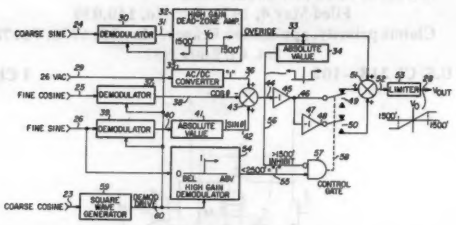


An alternating current electric motor speed control circuit including a bi-directional semiconductor control element in the motor circuit triggered from a blocking to a conductive state by the application of a potential to its control electrode applied through governor contacts of a motor speed governor contacts, which contacts are closed when the motor speed drops below a particular value which can be varied and which carry a small proportion of the total motor current.

3,701,936
FINE & COARSE SYNCHRO SERVOMOTOR CONTROL INCLUDING A DUAL SIN/COSINE TO DC CONVERTER

Kenneth G. Martin, Cedar Rapids, and Paul A. Seuferer, Baltic, both of S. Dak., assignors to Collins Radio Company, Cedar Rapids, S. Dak.

Filed Dec. 10, 1971, Ser. No. 206,603
Int. Cl. G05b *11/18*
U.S. Cl. 318—595 **12 Claims**



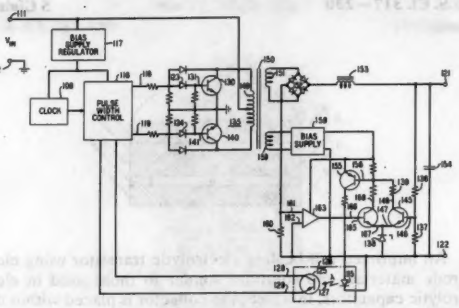
Dual-synchro coarse and fine error signals definitive of the discrepancy between a selected condition and that being experienced are converted by static means to a linear DC control signal. Linearization means implementing the control function $1-\cos\theta+\sin\theta$ are employed as concerns the fine error analog input signal, and the coarse error analog input signal is employed for switching functions which occur only at zero error and control extremes, thus obviating control discontinuities, transients, and sudden changes in control linearity.

3,701,937
PULSE-WIDTH MODULATED DC TO DC CONVERTER WITH ZERO PERCENT DUTY CYCLE CAPABILITY

Donald Earle Combs, Parsippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 30, 1971, Ser. No. 214,312
Int. Cl. H02m *3/32*
U.S. Cl. 321—2 **8 Claims**

A pulse-width modulated DC to DC converter is enabled to operate into short circuits and limit the current output by having the capability of operating at zero percent duty cycle. The regulation feedback loop utilizes a light-emitting diode and phototransistor optical arrangement to permit isolation between the input and output sides of the converter. The light emitting diode is responsive to voltage monitoring and current

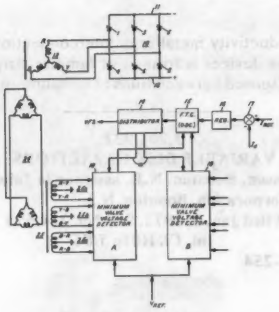


monitoring circuitry on the output side of the converter. The converter operates in a crossover mode in which the regulation switches from voltage regulation to current regulation or vice versa as load conditions change.

3,701,938
MINIMUM VALVE VOLTAGE METHOD AND CONTROL APPARATUS FOR HVDC POWER CONVERTERS

Philip Chadwick, Media Pike, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Aug. 9, 1971, Ser. No. 170,081
Int. Cl. H02m *7/12, 1/18*
U.S. Cl. 321—11 **18 Claims**



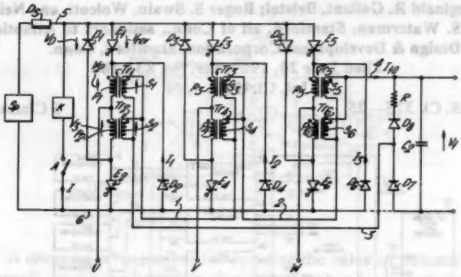
A minimum valve voltage firing control method and circuit for HVDC thyristor power converter circuit operated in the rectifying mode. The valve of the commutating voltage across the respective thyristor valves is sampled and the minimum sampled value during each valve firing stored on a capacitor through the medium of suitable valve voltage sampling and gating circuits. The stored valve voltage samples are compared to a minimum valve voltage reference value and an error signal derived under conditions where an insufficient valve voltage is indicated. The error signal is employed to increase the minimum angle of delay of firing α to a safe value adequate to assure a sufficient valve firing voltage.

3,701,939

REVERSE VOLTAGE CIRCUIT FOR THYRISTORS

Tom Kastrup Petersen, and Neils Juul Henriksen, both of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Dec. 28, 1970, Ser. No. 101,599
Claims priority, application Denmark, Dec. 29, 1969, 6861
Int. Cl. H02m 7/52
U.S. Cl. 321—45 R 3 Claims



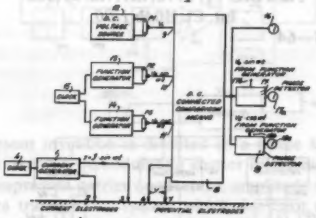
The invention relates to a reverse voltage circuit for thyristors which has particular application to an inverter circuit. The basic circuit includes a thyristor, a first diode, and a transformer having the primary winding thereof in series relation to the diode. The first diode and the transformer primary winding are in parallel relation to the thyristor with the diode being antiparallel relative to the thyristor. The transformer secondary winding and a second diode are in series and a D.C. voltage source biases the second diode in a counter direction relative to the secondary winding. With this circuit higher reverse voltages are obtained having relatively lengthy durations to effect switching off of a thyristor in a satisfactory manner.

3,701,940

SYSTEM FOR DETERMINING ELECTRIC GEOPHYSICAL PROSPECTING WORK USING SYNCHRONIZED CLOCKS AND DIRECT COUPLED COMPARISON MEANS

Bruno Yngve Nilsson, Boliden, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Filed Dec. 28, 1970, Ser. No. 102,020
Claims priority, application Sweden, Jan. 5, 1970, 81/1970
Int. Cl. G01v 3/06
U.S. Cl. 324—1 2 Claims



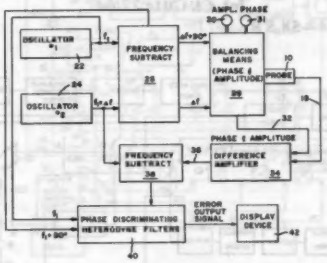
A system for determining in geophysical prospecting work the complex electric field generated by an AC current charged to the ground, wherein the synchronization of the AC current charged to the ground and a compensation measuring means is provided by at least one precision clock, e.g., quartz-oscillator, and wherein the measuring means is direct-coupled and provided with means compensating for and balancing the DC current occurring in the measured signal. The measuring means is further provided with means compensating for the part of the measured signal being in phase with said AC current and means compensating for the part of the measured signal being 90° out of phase from said AC current.

3,701,941

MAGNETIC ANOMALY DETECTOR WITH MEANS FOR OBTAINING DIFFERENT TEST FREQUENCIES

Walter J. Bantz, Fairfield, and Richard J. Pittaro, Stamford, both of Conn., assignors to Branson Instruments Incorporated, Stamford, Conn.

Filed Sept. 28, 1971, Ser. No. 184,350
Int. Cl. G01r 33/12
U.S. Cl. 324—37 20 Claims



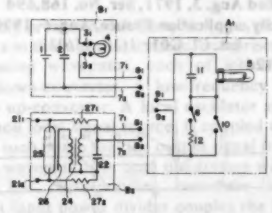
A magnetic detecting apparatus comprises a probe having two coils which are moved through a metallic workpiece (tubing) to detect anomalies. The coils are connected to an electronic circuit which includes two oscillators whose output frequencies are subtracted to provide a signal of suitable frequency to the probe coils. Additionally, phase shift means are provided to produce a balancing signal in order to analyze and display the anomaly responsive signal produced by the test coils with respect to phase and amplitude. Different test frequencies are obtained by changing the frequency of one of the oscillators.

3,701,942

ATTACHABLE TEST DEVICE FOR A FLASH DEVICE

Tatsuo Kobayashi, and Yoshiharu Ota, both of Kawanishi, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed March 13, 1970, Ser. No. 19,326
Claims priority, application Japan, March 17, 1969, 44/20289
Int. Cl. G01r 31/02, 31/22
U.S. Cl. 324—51 3 Claims



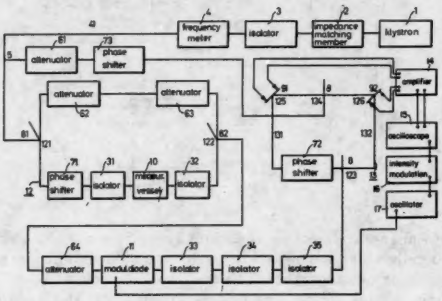
A photographic camera provided with a circuit composed of an indicating lamp connected to one of a pair of terminals on the camera which terminals are connectable respectively to synchro-terminals of a flash device. A shunting condenser is connected in parallel with the indicating lamp, and a circuit having a resistance and a manually operative test switch in series, in parallel with a synchronizing switch is connected

between the other of the pair of terminals and the indicating lamp and condenser. Thereby, all the flash circuits including a flash tube, the flash device, the synchro-terminals of the flash device and the camera and the electrical connection therebetween may be tested by means of the indicating lamp by the closing of the test switch.

3,701,943
PROCESS AND DOUBLE-BRIDGE ARRANGEMENT FOR EXAMINATION OF RAPID PHASE AND AMPLITUDE CHANGES OF HIGH-FREQUENCY WAVES CAUSED BY A MEDIUM UNDER TEST

Nils Kaiser, 80 Waldpromenade, Gauting, near Munich, Germany

Continuation-in-part of Ser. No. 290,139, June 24, 1963, abandoned. This application Sept. 7, 1967, Ser. No. 666,058
Int. Cl. G01r *27/04*
U.S. Cl. 324—58.5 R **4 Claims**

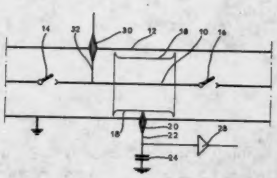


The present i.vention relates to a method of examining the condition of a medium undergoing chemical or physical changes, as for example, the measurement of reaction speeds, wherein the medium undergoing physical and/or chemical change is subjected to ultrahigh frequency radiation beams and detecting and measuring any changes in phase of the said frequency after contact with the medium. One convenient method of carrying out the claimed invention comprises directing an ultrahigh frequency wave beam at a specified frequency upon the medium to be measured and detecting and measuring any changes of amplitude and phase of the frequency of the beam after leaving said medium.

3,701,944
HIGH-VOLTAGE METAL-CLAD APPARATUS COMPRISING A CAPACITIVE VOLTAGE DIVIDER

Jean E. Amalric, Grenoble, France, assignor to Merlin Gerin, Grenoble, France

Filed Aug. 3, 1971, Ser. No. 168,694
Claims priority, application France, Aug. 6, 1970, 7029159
Int. Cl. G01r *1/20, 35/02*
U.S. Cl. 324—126 **5 Claims**

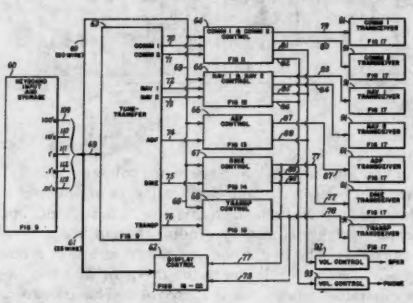


High-voltage metal-clad apparatus comprising a pressurized grounded metal enclosure and an axial high voltage conductor. A capacitive voltage divider cooperates with a section of the conductor that can be isolated to deliver a low voltage output signal. A movable probe can apply a test voltage to the conductor to calibrate the voltage divider in situ. The probe is voltage-supplied through a bushing traversing the enclosure and rated only for a fraction of the rated high voltage of the apparatus.

3,701,945
INTEGRATED PUSH BUTTON PANEL FOR CONTROLLING AIRCRAFT INSTRUMENTALITIES

Reginald R. Gallant, Bristol; Roger S. Swain, Wolcott, and Neil S. Waterman, Stamford, all of Conn., assignors to Atlantic Design & Development Corporation, Stamford, Conn.

Filed June 20, 1969, Ser. No. 835,164
Int. Cl. H04b *1/44*
U.S. Cl. 325—25 **5 Claims**

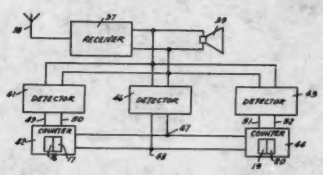


A panel for controlling a plurality of instruments has a centrally disposed numerical keyboard of eleven push buttons and a plurality of digital display means, one display connected with the keyboard to indicate the sequence in which the numerical push buttons have been manipulated, each of the other display means connected with one of the instruments to indicate the digital data by which it is controlled. Digital memory storage units are associated with the keyboard and with each instrument. Switching means on the control panel enables the selected numerical setting in the keyboard storage unit to be transferred to any of the other display means, while servo means directs each instrument to respond to the digital data registered in its digital memory storage unit, as may be shown by its associated display. The eleventh push button serves to clear the keyboard and its associated digital display.

3,701,946
DEVICE FOR TRANSMITTING AND DISPLAYING SCORES ON TELEVISION AND RADIO RECEIVERS

Duane S. Anderson, 1142 Heather Lane, Glen Ellyn, Ill.

Filed Dec. 11, 1970, Ser. No. 97,063
Int. Cl. H04b *1/00*
U.S. Cl. 325—64 **3 Claims**



System and apparatus for presenting to radio and TV users secondary information such as scores in sports events. Periodically, auxiliary information is transmitted with the radio and television signals which is detected at the receiver and supplied to an auxiliary presentation device which continuously presents the auxiliary information to the user.

3,701,947

METHOD OF MAKING A DECISION ON THE VALUE OF A PULSATORY SIGNAL AND DEVICE FOR CARRYING OUT THIS METHOD

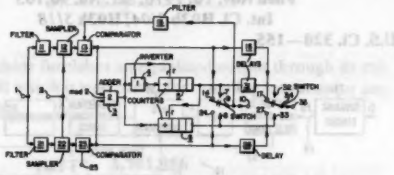
Derk Van Der Houwen, Leidschendam, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed Jan. 22, 1971, Ser. No. 108,801

Claims priority, application Netherlands, Jan. 23, 1970, 7000945

Int. Cl. H04b 1/10

U.S. Cl. 325—321 3 Claims



A decision arrangement for deciding the value of pulsatory signals occurring in a synchronous baseband transmission system comprises a first decision circuit with quantized feedback for providing a variable decision threshold. Possible instabilities of the first decision circuit as a result of the quantized feedback are corrected by providing a second decision circuit with a fixed decision threshold and by coupling both decision circuits to a decision comparator controlling a switch so as to connect either the first decision circuit or the second decision circuit to the output of the decision arrangement in accordance with a predetermined program of the decision comparator.

3,701,948

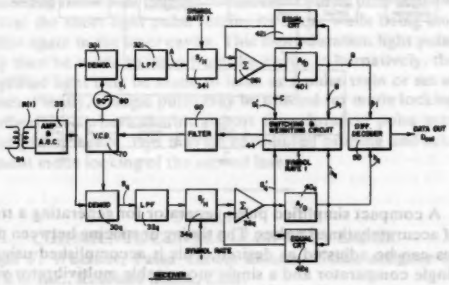
SYSTEM FOR PHASE LOCKING ON A VIRTUAL CARRIER

Gerald K. McAuliffe, Mahopac, N.Y., assignor to North American Rockwell Corporation

Filed Sept. 17, 1970, Ser. No. 72,962

Int. Cl. H04b 1/68

U.S. Cl. 325—329 3 Claims



The present invention is directed to a phase lock system which can derive a demodulating carrier reference signal for use in a suppressed carrier quadrature, amplitude modulating digital data transmission system which does not require the transmission of a low level carrier or pilot tones. The system operates by multiplying the equalized received signal in each channel by the decoded *n*-level data signal of the other received channel, subtracting the products and dividing the result by the sum of the squares of the data signal levels to arrive at an error signal which is proportional to the phase error between the demodulating carrier reference signal and the suppressed transmitting carrier. The derived error signal can be made independent of data signal level values and the received signal levels even in the presence of severe intersymbol interference. The derived phase error signal is fed back to a variable oscillator providing the demodulating carrier reference signal to change the phase of the reference signal so as to reduce the error signal towards zero.

3,701,949

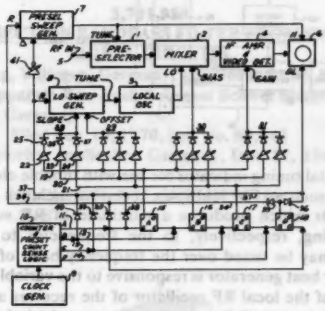
WIDEBAND FREQUENCY SCANNING RADIO RECEIVER

Sidney Turkish, Dix Hills, N.Y., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed March 22, 1971, Ser. No. 126,476

Int. Cl. H04b 1/36

U.S. Cl. 325—332 4 Claims



A superheterodyne system utilizing successive harmonics of an electrically tunable local oscillator, which is repeatedly swept over a frequency range of about one octave or less, to scan throughout a radio frequency range of several octaves in a substantially continuous manner.

3,701,950

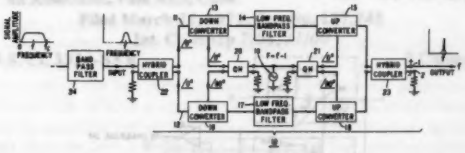
NARROW-BAND FILTER

Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hil, N.J.

Filed April 14, 1971, Ser. No. 134,007

Int. Cl. H04b 1/26

U.S. Cl. 325—340 7 Claims



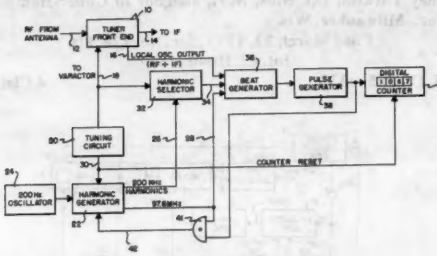
An extremely narrow-band filter, having a passband of less than one hertz in the megahertz range, comprises two parallel, signal processing wavepaths, each of which includes, in cascade, a down-converter, a low-frequency narrow-band filter, and an up-converter. A local oscillator signal, derived from a common local signal source, is coupled to each of the converters in such phase that the output signal from each converter in one wavepath is in time quadrature with the output signal from the corresponding converter in the other wavepath. An input power divider couples the input of each down-converter to a common input circuit. A hybrid coupler connects the outputs from the two up-converters to a common output circuit.

In one embodiment, automatic frequency control is applied to the local oscillator along with means for controlling the bandwidth of the low-frequency filters. In another embodiment, the filter output signal is shifted in frequency and then used as the local oscillator.

3,701,951
DIGITAL INDICATOR FOR USE WITH TUNABLE ELECTRONIC APPARATUS

Friedrich Johann Krausser, Jericho, N.Y., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 5, 1971, Ser. No. 104,068
Int. Cl. H04b *1/06*
U.S. Cl. 325—455 **6 Claims**

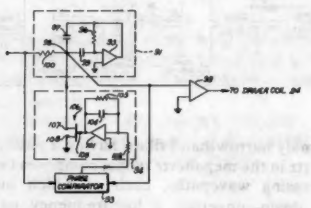


A digital tuning indicator for use with tunable electronic apparatus such as FM multiplex receivers includes a harmonic generator which produces a multitude of RF voltages corresponding, respectively, to the frequencies to which the device may be tuned over the frequency band of interest. A mixer or beat generator is responsive to the variable frequency output of the local RF oscillator of the receiver and the harmonic corresponding to the frequency to which the receiver is tuned. A pulse generator coupled to the output of the beat generator produces a pulse when the frequency to which the receiver is tuned approaches the frequency of a station within the frequency band. These pulses are counted by a digital counter which is calibrated to provide a visual indication of the frequency of the station to which the receiver is tuned.

3,701,952
DENSITOMETER

Charles Eveleigh Miller, and Gerald Lance Schlatter, both of Boulder, Colo., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 65,371, Aug. 20, 1970, Pat. No. 3,677,067. This application Oct. 20, 1971, Ser. No. 190,738
Int. Cl. G06g *7/18*
U.S. Cl. 308—127 **2 Claims**

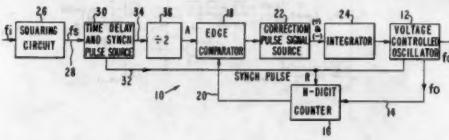


A densitometer which utilizes a thin vane vibrated by a magnetostrictive tube. A piezoelectric crystal pickup feeds an amplifier and tracking filter to energize a coil around the magnetostrictive tube. The device is, in effect, an electromagnetic oscillator in that the coil is driven in phase with the detected signal. Vibration thus increases in amplitude until limited electrically. A linearization circuit provides an output D.C. voltage directly proportional to fluid density, gas, or liquid, which may be impressed upon a conventional D.C. voltmeter calibrated linearly in density. A great many features, both in the mechanical structure and in the electronics, make it possible to easily calibrate the instrument to read, for example, to within an accuracy tolerance of ± 0.01 percent over a fluid density range of, for example, from about 0.08 pounds per cubic foot to 80.0 pounds per cubic foot. Another outstanding advantage of the invention relates to a probe type construction which may be used in a pipeline of any size.

3,701,953
DIGITAL PHASE LOCK LOOP CIRCUIT EMPLOYING OSCILLATOR TRIGGERED AT ZERO VOLTAGE CROSSING OF INPUT SIGNAL

Andre Lubarsky, Jr., Sunnyvale, Calif., assignor to Telecommunications Technology, Inc.

Filed Nov. 16, 1970, Ser. No. 90,103
Int. Cl. H03b *3/04*; H03k *5/18*
U.S. Cl. 328—155 **12 Claims**

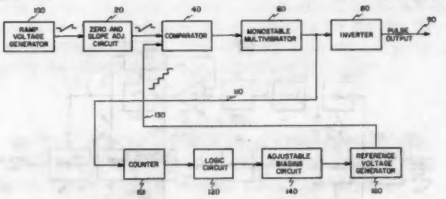


A predetermined number of pulses from the output of a controlled oscillator means is counted. The time duration required to reach this number is compared to the time duration of a predetermined portion of an input signal. On the basis of this comparison the pulse frequency of the oscillator means is varied such that in subsequent time duration comparisons, the time difference is substantially eliminated and the output pulses are in a phase relationship with said input signal.

3,701,954
ADJUSTABLE PULSE TRAIN GENERATOR

Albert F. Seminatore, San Jose, and Steven R. Bryan, Campbell, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed July 7, 1971, Ser. No. 160,381
Int. Cl. H03k *1/00, 5/00*
U.S. Cl. 328—59 **3 Claims**



A compact simplified pulse generator for generating a train of accurately timed pulses. The timing or spacing between pulses can be adjusted as desired. This is accomplished using a single comparator and a single monostable multivibrator with a digitally controlled reference voltage generator.

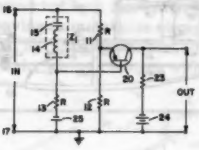
3,701,955
DELAY EQUALIZING AMPLIFIER HAVING BRIDGE CIRCUIT INPUT

John Gordon Spencer, Ottawa, Ontario, Canada, assignor to Northern Electric Company, Limited, Montreal, Quebec, Canada

Filed April 6, 1971, Ser. No. 131,674
Int. Cl. H03f *1/42*
U.S. Cl. 330—21 **12 Claims**

A delay equalizer circuit with constant impedance input is constituted by a bridge having three resistive arms and a fourth arm consisting of a resonant circuit. One diagonal

receives the input and the base and emitter of a transistor are connected across the other diagonal. Negative feedback causes the emitter to follow the base voltage closely.



The transistor furnishes an equalized output through its collector circuit which is well suited for coupling to transistor amplifying stages.

3,701,956

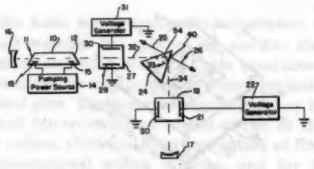
METHOD OF AN APPARATUS FOR GENERATING ULTRA-SHORT TIME-DURATION LASER PULSES

William W. Simmons, Palos Verdes Peninsula, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed May 14, 1971, Ser. No. 143,515

Int. Cl. H01s 3/11

U.S. Cl. 331—94.5 **10 Claims**



Both a method and an apparatus are disclosed for generating laser pulses having a time duration on the order of subnanoseconds. These light pulses also have a high output power. They are generated by causing a laser to lase and removing the bulk of the radiation contained in the laser cavity. The remaining radiation or light extends over only a short length of the cavity. This light pulse is mode locked, that is it consists of individual Fourier components of the proper phase so that the short light pulse retains its shape while being amplified again in the laser cavity. This short-duration light pulse may then be made to issue from the cavity. Alternatively, the amplified light may be made to issue as a pulse train or set of pulses. Finally, a single pulse may be utilized for mode locking another laser where the ultra-short time-duration pulse may be amplified again. This may be considered priming and subsequent mode locking of the second laser.

3,701,957

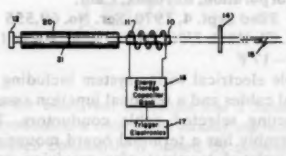
COHERENCE CONTROLLED RUBY LASER

Ralph F. Wuerker, Palos Verdes Estates, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Oct. 12, 1971, Ser. No. 188,150

Int. Cl. H01s 3/10

U.S. Cl. 331—94.5 **6 Claims**



A pulsed ruby laser is caused to oscillate substantially in a single mode to increase its coherence length. This is accomplished by the provision of one or more dye cells containing chlorophyll *d* as a saturable absorber for the laser radiation. The dye cell has a length of no less than one-quarter and no more than two-thirds that of the optical laser cavity and preferably has a length of approximately one-half that of the cavity. Due to the provision of such a long chlorophyll *d* dye cell the initial mode of oscillation of the laser is favored, and the dye cell discriminates to a substantial extent against all other oscillating modes. This longitudinal mode control improves the temporal or longitudinal coherence of the laser. The chlorophyll *d* operating as a saturable absorber preferably is in a solvent transparent to the ruby radiation and having a high viscosity to minimize the effects of Brownian motion.

3,701,958

MULTISECTION BANDPASS FILTER FROM SMALL SIGNAL CIRCUITS

Herbert Jaag, Villingen, Germany, assignor to SABA Schwarzwalder Apparate-Bau-Anstalt August Schwer Sohne GmbH, Villingen, Germany

Filed Dec. 18, 1970, Ser. No. 80,443

Claims priority, application Germany, Dec. 17, 1969, P 69 48 645.9

Int. Cl. H03h 7/06, 7/08; H05k 1/14

U.S. Cl. 333—70 S **8 Claims**

Individual sections of the filter are printed on separate circuit boards, the rear faces of which are covered with a shielding layer. The boards are sandwiched together, separated by insulating plates, resulting pile forming the multisection filter.

3,701,959

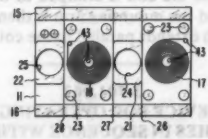
MICROWAVE CAVITY RESONATOR WITH PRINTED CIRCUIT INTERIOR WALLS AND MODULATION COILS

Stuart C. Hansen, Santa Clara County, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed March 24, 1971, Ser. No. 127,745

Int. Cl. H01p 7/06, 11/00

U.S. Cl. 333—83 R **3 Claims**



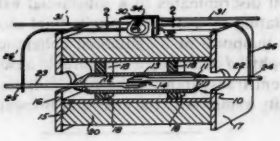
A microwave cavity resonator useful in electron paramagnetic resonance spectrometers made from a printed circuit board having an electrically conductive surface printed on one side thereof and folded so as to form a plurality of the walls of a parallelepipedon cavity resonator, the conductive surface of the circuit board forming the inner conductive surfaces of the cavity. Modulation coils formed by printed circuit techniques on the other side of the circuit board serve as field modulation coils for the cavity resonator, the conductive inner wall surfaces aligned with said coils being made pervious to enhance penetration of the modulation field into the cavity resonator.

3,701,960

REED RELAY HAVING LOW THERMAL EMF

Bruce D. Campbell, Foster, R.I., assignor to Coto-Coil Co., Inc.

Filed July 12, 1971, Ser. No. 161,781
Int. Cl. H01h *45/14*
U.S. Cl. 335—154 **7 Claims**



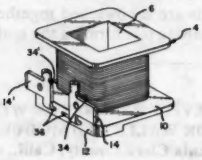
A reed relay switch consists of a pair of low reluctance, ferromagnetic, flattened reeds, which are hermetically sealed into a glass tube. The ferromagnetic material extends out of the glass tube and to a juncture with interconnecting conductors to external circuits. These junctures are usually of dissimilar metals and generate thermal EMF's. A thermally conductive electrical insulating body is provided and the connections are made at either side of this body so that the thermal EMF's produced by the thermally active junctions tend to cancel each other and reduce the thermal EMF across the reed relay.

3,701,961

ELECTRICAL BOBBIN WITH TERMINALS

Kenneth Foster Folk, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 66,379, Aug. 24, 1970, Pat. No. 3,641,650.
This application Feb. 9, 1972, Ser. No. 224,799
Int. Cl. H01f *15/10*
U.S. Cl. 336—192 **1 Claim**



An electrical terminal intended to be inserted into a flange of an electrical coil bobbin as a serated mounting arm at one end, a U-shaped crimp portion at the other end and a laterally extending tab between the mounting arm and the crimp portion. The mounting arm is inserted into a hole in the bobbin flange, a wire from the coil is crimped to the terminal at the crimp portion, and the mounting arm is then bent towards the coil so that the tab extends parallel to the coil windings.

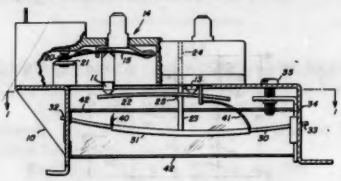
3,701,962

SWITCHING DEVICE FOR OPERATING A PLURALITY OF SWITCHES IN SEQUENCE WITH AMBIENT TEMPERATURE COMPENSATION

Thomas E. Ball, Anoka, and Vincent R. Anderson, Wayzata, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed March 18, 1971, Ser. No. 125,673
Int. Cl. H01h *71/22*
U.S. Cl. 337—101 **7 Claims**

A switching device for operating a plurality switch means sequentially wherein the operators of each of the switch means are engaged by a wobble plate at spaced positions around the periphery of the plate. A thermal operator comprising a heated bimetal has an output member for engaging the center of the wobble plate to apply a force on the plate and thus a force on each of the switch operators depending upon distance between the output member and the switch operator. The wobble plate is made of plurality of bimetal sheet members to bend in a cup shaped manner upon changes in temperature to provide ambient temperature compensation for the switching device.

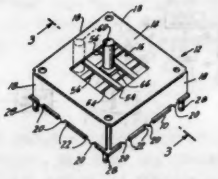


3,701,963

SINGLE CONTROL DEVICE FOR PLURAL VARIABLE RESISTORS

Masao Kasazima, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jan. 28, 1972, Ser. No. 221,733
Claims priority, application Japan, Feb. 3, 1971, 46/3773
Int. Cl. H01c *9/02*
U.S. Cl. 338—128 **10 Claims**



An improved control device for use in volume adjustment of a multi-speaker sound system is provided with means for simultaneously adjusting the volume of some or all of the speakers in the system. A plurality of variable resistors are mounted on an insulating substrate, the effective resistance of each resistor being adjustable by sliding contact means.

In a first embodiment of the invention an independent sliding contact means is provided for each variable resistor, those sliding contacts being simultaneously adjustable by means of a control knob operatively connected to a crossover linkage arrangement. The control knob extends through a window in the housing whereby the position of the apparent sound source is adjusted by reference to the position of the control knob within the housing substrate.

In a second embodiment of the invention the individual resistors each comprise a unique resistive pattern and a single carrier is provided with a plurality of sliding contacts engaging that resistive pattern in a predetermined manner in response to the manual operation of the control knob.

3,701,964

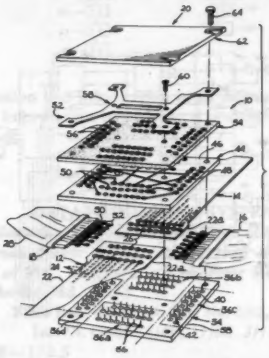
FLAT CABLE ELECTRICAL WIRING SYSTEM

Michael J. Cronin, Sherman Oaks, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Sept. 4, 1970, Ser. No. 69,555
Int. Cl. H01b *7/08;* **H01r** *29/00;* **H05k** *1/04*
U.S. Cl. 339—17 F **20 Claims**

A flat cable electrical wiring system including a number of flat electrical cables and a terminal junction assembly electrically connecting selected cable conductors. The terminal junction assembly has a terminal board mounting projecting electrically isolated terminal pins receiving apertured terminals on the cable conductors and retaining means for retaining the terminals on the terminal pins. Two cable configura-

tions are disclosed, one having flat conductors whose terminals are attached in a fixed geometric pattern directly to one end of the flat cable sheath and the other having round conductors whose terminal ends extend beyond the ends of the cable sheath. A variety of terminal junction assemblies are disclosed including one in which selected cable conductors are electrically connected by a flexible programmable circuit member or plug having terminal pins engaging elements electrically connected by programmable circuit means in a manner which permits wiring changes without major modification of the basic wiring system by substitution of one program circuit member for another. In another disclosed terminal junction assembly, selected cable conductors are electrically connected by engagement of their terminals over common terminal pins. The junction assemblies may be arranged for electrical interconnection of flat-to-flat or flat-to-round conductor cables, electrical interconnection of flat cable and existing conventional wiring systems, and for testing and monitoring of the individual wiring circuits entering the junction.



3,701,965

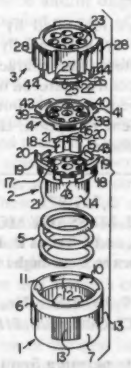
CONNECTOR FOR ELECTRICAL TERMINALS

Gideon A. DuRocher, and Ellsworth S. Miller, both of Mount Clemens, Mich., assignors to Essex International Inc.

Filed July 28, 1971, Ser. No. 166,936

Int. Cl. H01r *13/52, 13/54*

U.S. Cl. 339—60 M **18 Claims**



A connector for electrical terminals has a housing within which is accommodated a rotary and axially movable first terminal carrier which constantly is biased by a spring to move axially of the housing toward a second terminal carrier which is rotatably assembled with the housing and is drivingly coupled to the first carrier to impart rotation thereto. Discontinuous flanges on the housing and the first carrier disable axial movement of the latter in one position of rotary adjustment thereof and in a second position of rotary adjustment enable axial movement of the first carrier toward the second carrier. The second carrier has discontinuous flanges which cooperate with the discontinuous flanges on the housing in the second position of rotary adjustment of the carriers to prevent separation of the second carrier from the housing. The terminals carried by the carriers confront one another and engage a resilient, compressible pad of elastomeric material containing electrically conductive particles which establish a conductive path between the confronting terminals. The terminals themselves preferably are integrally formed at the free ends of wire conductors.

3,701,966

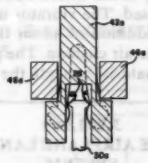
ELECTRICAL CONNECTOR

Robert Maclay Murray, Elizabethtown, Pa., assignor to AMP Domestic Inc.

Division of Ser. No. 864,787, Oct. 8, 1969, Pat. No. 3,585,502. This application Aug. 28, 1970, Ser. No. 68,034

Int. Cl. H01r *11/24*

U.S. Cl. 339—95 R **1 Claim**



An electrical connector formed by a die blanking operation having an improved smooth edge contact surface formed by a fine scraping of said edge to remove the rough fractured surface remaining after the blanking operation; also, the method and apparatus for forming said improved smooth contact surface.

3,701,967

FEMALE CONNECTOR STRIP WITH INTERCHANGEABLY RETAINED CONTACT SPRINGS

Erich Kreutter, Winterbach, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jan. 29, 1971, Ser. No. 110,899

Claims priority, application Germany, Feb. 4, 1970, P 20 05 100.7

Int. Cl. H01r *9/08*

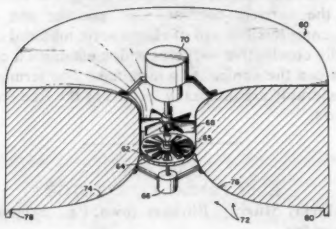
U.S. Cl. 339—217 S **2 Claims**

A female connector strip having contact springs which are interchangeably retained in a contact chamber. The contact chamber has a rectangular cross-section with each of the contact springs being of substantially U-shaped cross-section and having a box-shaped supporting body. The springs have contact points consisting of two ends of the limbs of the U-profile which, within the range of one face side of the supporting body are extended and folded towards the inside, the ends being directed towards each other. Further, the resilient ends of the contact reeds are touching each other.

3,701,968
AIR CUSHION SEISMIC VIBRATOR

Robert A. Broding, Tulsa, Okla., assignor to Seismograph Service Corporation, Tulsa, Okla.

Filed March 9, 1970, Ser. No. 17,440
Int. Cl. G01v 1/22
U.S. Cl. 340—17 14 Claims

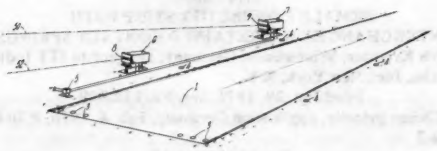


A seismic vibrator is designed for use over all kinds of terrain including marshy areas where conventional land or sea vibrators cannot be used. The vibrator is an air cushion vehicle modified by the addition of an air flow modulator which pressure modulates the air cushion. The pressure modulations are passed on to the material beneath the vehicle.

3,701,969
OPTICAL FAILSAFE AIRPLANE LANDING GUIDANCE SYSTEM

Robert E. Lambert, Hazardville; Edward W. Beal, Wethersfield, and Anthony J. Bacewicz, East Hartford, all of Conn., assignors to Connecticut International Corporation, Windsor Locks, Conn.

Filed July 13, 1971, Ser. No. 162,131
Int. Cl. B64f 1/18; G08g 5/02
U.S. Cl. 340—25 12 Claims

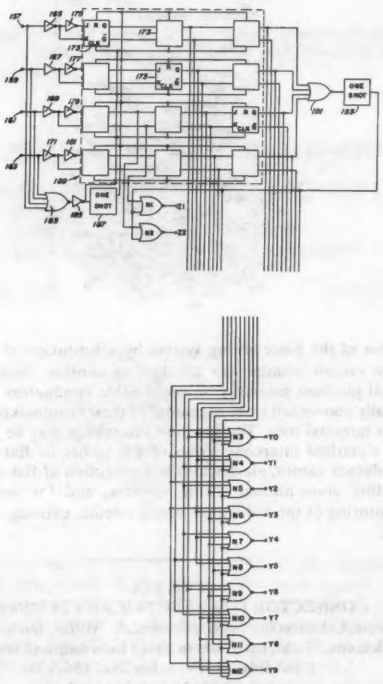


An optical failsafe airplane landing guidance system is disclosed. A pair of lights are placed longitudinally relative to each other along a runway and emit light beams pointed upwardly and parallel to the runway define the vertical boundaries of a safe landing corridor. The lights are connected in series and include a photocell and a bi-stable relay in their control circuit to control the level of light and disable the system when either of the lights is out of adjustment. Each light includes an attitude switch comprising a heavy cylindrical pendulum supported by a stranded cable and positioned in a cup submerged in a viscous liquid, such as an equal mixture of two silicone liquids having centistoke ratings of about a 5 to 1 ratio, having minimum viscosity change over an ambient temperature range of −65° F. to +130° F. The cylindrical pendulum is spaced from the cup by an annulus which forms a hydraulic orifice in which the ratio of the diameter of the cylindrical to the width of the orifice is about 10 to 1 so that the pendulum is vibration insensitive and the switch will not close under low frequency vibrations having a double amplitude of about 10 times the maximum allowable misadjustment acceptable for landing guidance.

3,701,970
SELECTING APPARATUS AND METHOD FOR PHONOGRAPH

Thomas P. Jachimek, Evergreen Park, and Thomas A. Murrell, Urbana, both of Ill., assignors to The Seeburg Corporation of Delaware, Chicago, Ill.

Continuation-in-part of Ser. No. 862,624, Sept. 11, 1969, abandoned. This application Sept. 11, 1970, Ser. No. 71,501
Int. Cl. G11b 19/08; G07f 11/00
U.S. Cl. 340—162 10 Claims



Vending selections are identified by a character format. Selections are chosen by sequentially actuating switches representing the characters. The characters of the selection identifying format are coded and stored until the entire format has been coded and stored, at which time the coded format is transmitted for subsequent reception, storage and decoding. Integrated circuitry is utilized.

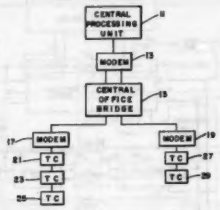
3,701,971
TERMINAL MESSAGE MONITOR

Gary L. Sanner, Detroit, and Charles B. Hebeler, Farmington, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 9, 1970, Ser. No. 79,563
Int. Cl. G06f 3/00, 9/18
U.S. Cl. 340—172.5 6 Claims

A monitoring system to permit a first terminal computer on line with a central processor to monitor message traffic from the central processor to other terminals concatenated or in a multidrop mode with the first. When messages are sent through a modem to a plurality of terminal computers in a concatenated configuration a verification of message traffic is provided. Logic circuitry is provided for monitoring both transmitted and received information and providing a printout

of the communication line information. The monitoring terminal, regardless of the address of the message, will store the



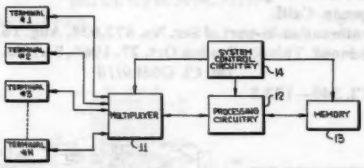
communication line information in its memory and print out the stored information to provide a positive communication system check.

3,701,972

DATA PROCESSING SYSTEM

Arnold D. Berkeley; Eugene W. Bold, both of Potomac; Donald E. Jefferson, Silver Spring, and Gerard A. Zeller, Ellicott City, all of Md., assignors to Computer Retrieval Systems, Inc., Bethesda, Md.

Filed Dec. 16, 1969, Ser. No. 885,608
Int. Cl. G06f *15/40, 11/00, 3/14*
U.S. Cl. 340—172.5 **202 Claims**



A programmable special purpose data processor is provided with both circuits and stored programs for effecting one or more specific processing jobs. Data characters, sequentially provided by a data terminal and processed in accordance with similarly provided control characters, are stored in a memory unit after being processed. A stored program of instructions controls processing in a predetermined sequence which can be modified by the control characters. The stored characters may be selectively modified and/or displayed at the terminal. The various circuits provided as part of the processor operatively interconnect only in response to specific active instructions and are preferably modular in nature so as to be readily interchanged or, if desired, added to or deleted from the system.

The programs are a plurality of stored instructions of either fixed minimum length or variable length, packed one after the other without wasted space in a program memory unit. No instructions can be erased or otherwise changed during the course of processing, and all instructions contain an N-bit operation code. These operation codes are selectively addressed to effect various circuit operations when addressed. In one embodiment each instruction contains only an operation code; in another embodiment some instructions also include a next address portion and a match character portion stored at respective addresses immediately following the operation code of the same instruction. The next address portion designates the address of the next instruction to be performed where that address does not sequentially follow the address of the current instruction; the match character portion contains a reference number to be compared with data being processed.

In another respect of the invention multiple data terminals are serviced on a time-sharing basis. A multiplexer sequentially samples each terminal, which, when found ready for processing, has an entire unit record of data completely processed before sequential sampling is resumed. Once a processing job is begun for a terminal that terminal cannot be locked out during subsequent multiplexer cycles until the job is completed.

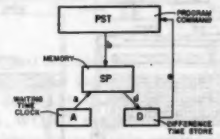
In another aspect of the invention, text processing is accomplished in a manner to permit a document to be edited by summoning specified stored lines of processed text characters from a random access memory. The summoned line can be modified in whole or in part. The processor, upon receiving text characters to be inserted in the summoned line, stores them at an available location in memory, irrespective of the proximity of that location to the stored portions of the original document. By a novel document-chaining technique, the corrected document may be selectively displayed in its proper sequence. Document chaining is also employed to keep track of successive pages in a document which are not necessarily stored successively in memory.

3,701,973

DATA PROCESSING ARRANGEMENT FOR PROCESSING WAITING TIME COMMANDS

Dietrich von der Pfordten, Egenbuttel, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 23, 1970, Ser. No. 74,570
Claims priority, application Germany, Sept. 24, 1969, P 19 48 302.4
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **4 Claims**



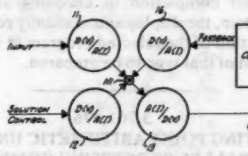
A data processing arrangement for processing waiting time commands comprising a source of clock signals representing real time and waiting time, a memory for recording the real times of termination of waiting time commands, means for providing only one waiting time clock is set at the difference time between the instantaneous real time and the real time of the next termination of the waiting time of a waiting time command whenever a waiting time terminates and also when a new waiting time command occurs.

3,701,974

LEARNING CIRCUIT

Lewis Keith Russell, San Jose, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed May 20, 1971, Ser. No. 145,213
Int. Cl. G05b *13/00*
U.S. Cl. 340—172.5 **10 Claims**



A learning circuit of the type adapted to converge on a desired output in response to solution control signals. A number generator is provided for producing digital circuit input signals according to a predetermined probability distribution. A digital to analog converter converts the digital input signals to discrete analog input currents. Another digital

to analog converter is responsive to digital solution control signals for producing discrete analog solution control currents. A digital counter has a digital counting signal input and an output comprising a digital voltage counter state feedback signal proportional to the count in the counter. An additional digital to analog converter is provided for converting the digital counter state feedback signal to a discrete analog feedback current. The input current, the solution control current and the feedback current are summed at a current node. The current node has a sum current output for driving an analog to digital converter which converts the sum current output to a digital voltage output. The digital voltage output constitutes the circuit output and is also applied to the digital voltage counting input of the digital counter.

3,701,975

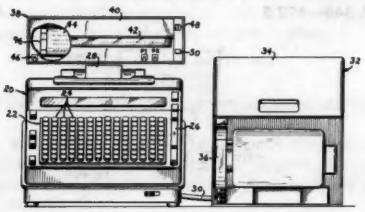
APPARATUS FOR INSTRUCTING DATA SYSTEM MACHINE OPERATORS IN THE ENCODING OF SOURCE DOCUMENTS

Frank J. McBride, 104 West Lake Drive, and Carl Robert Lindsley, 2332 Mayfair Drive, both of Salina, Kans.

Filed Dec. 23, 1970, Ser. No. 100,956

Int. Cl. G09b *13/04*

U.S. Cl. 340—172.5 **6 Claims**



Apparatus for instructing the operator of a data system machine, such as a multiple row keyboard adding machine of an add-punch system. Instructions for each line of the source document are on a suitable optical medium, such as a rotary drum or a film strip. A line of instructions for a given line to be completed on the document is displayed in view of the operator, and the display is automatically advanced to the next succeeding line of instructions when the line on the document is encoded and the document likewise advanced to the next line. The lines of instructions on the medium are grouped into programs corresponding to the various types of source documents to be accommodated, each program being selectable by the operator. After completion of encoding at the end of a selected program, the display automatically returns to the first line of instruction of the selected program in readiness for the next document of that type to be prepared.

3,701,976

FLOATING POINT ARITHMETIC UNIT FOR A PARALLEL PROCESSING COMPUTER

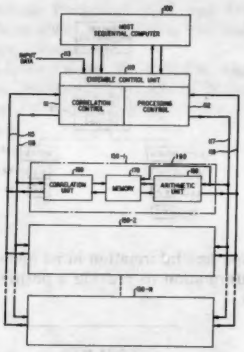
Richard Robert Shively, Convent Station, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed July 13, 1970, Ser. No. 54,522

Int. Cl. G06f *15/16, 7/38*

U.S. Cl. 340—172.5 **11 Claims**

A digital array data processor having a plurality of substantially identical processing units is described. Each processing unit includes a floating point arithmetic unit which performs arithmetic operations based on control signals sent on a common bus to each processing unit. The arithmetic unit further includes a single step combinatorial shifting circuit for aligning and normalizing operands.



3,701,977

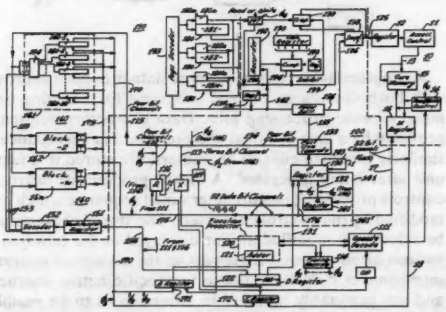
GENERAL PURPOSE DIGITAL COMPUTER

Myron J. Mendelson, Encino, and Alfred W. England, Los Angeles, both of Calif., assignors to Delaware SDS, Inc., El Segundo, Calif.

Continuation-in-part of Ser. No. 572,835, Aug. 16, 1966, abandoned. This application Oct. 27, 1969, Ser. No. 869,773

Int. Cl. G06f *9/18*

U.S. Cl. 340—172.5 **8 Claims**



A computer CPU and memory system with private, fast access CPU memory organized in blocks and program variable block selector. The locations of the selected block serve as accumulator extension and index registers. Mapping, memory protect and interrupt features with priority control are included.

3,701,978

STORAGE AND CONVERTER SYSTEM

Herbert Edward Miller, Brookline, Mass., assignor to Epsco Incorporated, Westwood, Mass.

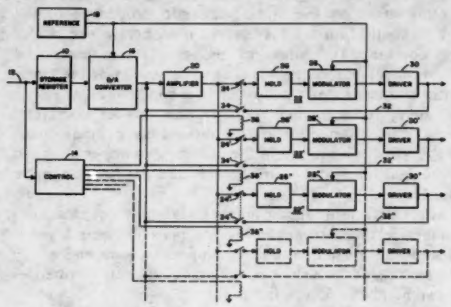
Division of Ser. No. 785,284, Dec. 19, 1968, Pat. No. 3,585,308. This application Oct. 23, 1970, Ser. No. 83,585

Int. Cl. G11c *21/00*

U.S. Cl. 340—173 R **8 Claims**

A multiplex converter system for continuously, selectively updating information in a plurality of analog output channels by means of a single input channel by converting an input signal from the input channel to a first analog signal and stor-

ing it in a particular one of the channels to provide a second analog signal output from that channel which is a replica of



the first analog signal, while the other channels are similarly updated by other input signals supplied by the input channel.

3,701,979

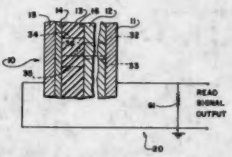
SLOW WRITE-FAST READ MEMORY METHOD AND SYSTEM

Donald O. Smith, Lexington; Kenneth J. Harte, Carlisle, and Mitchell S. Cohen, Watertown, all of Mass., assignors to Micro-Bit Corporation, Burlington, Mass.

Filed Jan. 9, 1970, Ser. No. 1,755

Int. Cl. G11c *11/42, 11/34*

U.S. Cl. 340—173 R **31 Claims**



A slow write-fast read out information storage and retrieval method and system is described for use as a computer memory. The method and system employs a memory element comprising a conductive back layer, a semiconductor layer and an insulator enriched with an additive polarizing material such as the alkali metals sodium or lithium and a conductive front layer arranged in the order named in the form of a sandwich with the semiconductor layer and polarizing material enriched insulator layer forming an interface. By selectively heating discrete different locations on the memory element with a directed electron beam in accordance with the intelligence to be recorded, and applying a polarizing electric potential across the memory element which maintains the insulator layer positive with respect to the semiconductor layer concurrently with the selective heating, positive electric charges (which are non-destructive during read-out) will be formed in the insulator layer due to mobile ions of the additive alkali metal polarizing material which are transported to the interface as a result of the polarizing potential. The positive electric charges in turn produce space charge regions in the semiconductor layer adjacent to the interface at the selectively heated different discrete locations. If the semiconductor layer is a p-type semiconductor, the space charge region is a depletion region. If the semiconductor layer is a n-type semiconductor, the space charge region will be an accumulation region. By subsequently allowing the insulator layer to cool, the mobile ion charges thus transported to the interface at the selectively heated locations will be frozen in to thereby form selectively located, semi-permanent, space charge regions in the semiconductor layer whereby the intelligence to be recorded is embodied in the selectively located charges. In a subsequent reading operation, a read-out electron beam is caused to penetrate through the insulator layer and interface to the space charge region of the semiconductor layer where it will produce electron-hole carriers in the space charge region. To facilitate the reading operation, a polarizing, reading potential may be applied across the memory element simultaneously with the read-out electron beam. In the selectively located space charge regions, a considerably increased electron-hole pair current will be produced compared to that normally induced by the electron beam itself in those regions which have not been selectively polarized. Consequently a pulsed current output can be derived during the reading operation which is indicative of the data or intelligence stored in the memory element.

3,701,980

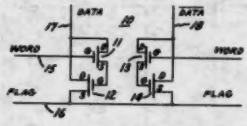
HIGH DENSITY FOUR-TRANSISTOR MOS CONTENT ADDRESSED MEMORY

Joseph L. Mundy, Schenectady, N.Y., assignor to General Electric Company

Filed Aug. 3, 1970, Ser. No. 60,336

Int. Cl. G11c *11/40, 15/00*

U.S. Cl. 340—173 AM **22 Claims**



A content addressed memory cell containing the minimum number of access lines and the minimum number of semiconductor devices is disclosed. In this cell, each intersection of the DATA, DATA, WORD, and FLAG lines contains a single transistor; preferably a metal-oxide semiconductor, field-effect transistor. By appropriate selection of these lines as inputs and outputs to the cell, the functions of writing, reading, searching, searching with mask, and refreshing are obtained.

3,701,981

THREE-DIMENSIONAL STORAGE DEVICE COMPRISING MAGNETIC MEMORY ELEMENTS

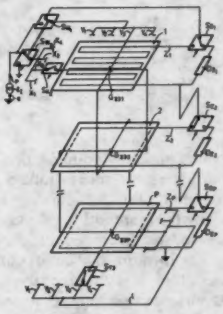
Gerrit Hilbertus Schouten; Nicolaas Bohlmeijer; Hendrik van der Steeg, and Marinus Cornelius van der Maarel, all of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 22, 1970, Ser. No. 82,984

Claims priority, application Netherlands, Oct. 31, 1969, 6916401

Int. Cl. G11c *5/02, 11/06*

U.S. Cl. 340—174 AC **8 Claims**



Three-dimensional store in which the x- and/or the y- with the z-conductors are connected in series to one or to two cur-

rent sources. The internal dissipation of the store is thus reduced and a complete compensation both in waveform and in time of half the write current is obtained by the forbidding current.

A plurality of z-conductors may be used in each plane for reducing the impedance connected to the current source, said z-conductors forming mutual dummies.

3,701,982

MEMORY MATRIX UNIT

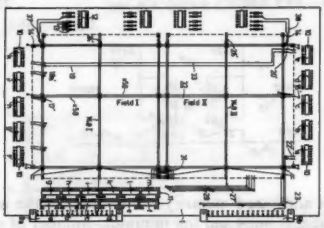
Jurgen Freudeberg, Eiserfeld, and Hermann Rudolff, Kreuztal-Buschhit, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 22, 1970, Ser. No. 82,961

Claims priority, application Germany, Oct. 24, 1969, P 19 53 553.6

Int. Cl. G11c *5/08*

U.S. Cl. 340—174 MA **4 Claims**



A memory construction employing fields of cores arranged on both sides of a bilaterally printed circuit board, the electrical connections of the fields being established by lead through contacts, and including accessing and drive components on both sides of the bilaterally printed circuit.

3,701,983

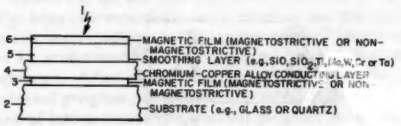
MAGNETOSTATICALLY COUPLED THIN-FILM MAGNETIC MEMORY DEVICES

Dennis M. Franklin, Randolph; Richard M. Hornreich, Sudbury, and Harvey Rubinstein, Lynnfield, all of Mass., assignors to Sylvania Electric Products, Inc.

Filed Dec. 19, 1969, Ser. No. 886,515

Int. Cl. G11c *11/14*

U.S. Cl. 340—174 QA **20 Claims**



A multilayer magnetostatically coupled thin-film magnetic memory device comprising, in succession, a first magnetic film, a chromium-copper alloy conducting layer having a reasonably low resistivity, a smoothing layer, and a second magnetic film. Due to the presence of chromium in the chromium-copper alloy forming the conducting layer, when the second magnetic film is subsequently formed on the smoothing layer at an elevated temperature, the resulting grain growth and surface roughness of the chromium-copper alloy conducting layer are less severe than with other known metals having reasonably low resistivity values (e.g., copper, silver, gold, and aluminum) previously suggested for use as conducting layers in magnetostatically coupled thin-film magnetic memory devices. Consequently, the effects of grain growth and surface roughness of the chromium-copper alloy conducting layer on the static magnetic properties of the second magnetic film are less severe than heretofore, and a smaller combined thickness of the conducting layer and smoothing layer is required to make the values of the static magnetic properties of the first and second magnetic films nearly equal. As a further result of the smaller combined thickness of the conducting and smoothing layers made possible by the use of chromium in the chromium-copper alloy, an improved magnetostatic coupling between the two magnetic films is obtained.

An alternative multiplayer magnetostatically coupled thin-film magnetic memory device having no smoothing layer is also disclosed for use in less stringent applications where very close matching of the values of the static magnetic properties of the two magnetic films is not required.

3,701,984

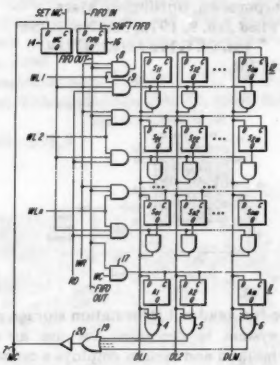
MEMORY SUBSYSTEM ARRAY

Joseph Richard Burns, Trenton, N.J., assignor to RCA Corporation

Filed March 5, 1971, Ser. No. 121,368

Int. Cl. G11c *15/00*

U.S. Cl. 340—173 R **4 Claims**



Memory subsystem used with a main storage memory for storing data signals representing blocks of information arranged in words. Digit lines coupled in parallel to all memory subsystems carry block address signals which are compared to associative word signals stored in each memory subsystem. If the block address signals match the associative word signals in one of the memory subsystems, the data signals are retrieved from the memory subsystem containing the matching associative word. If no memory subsystem contains a matching associative word, the information addressed is retrieved from the main storage memory and the data signals and block address signals are transferred to a selected memory subsystem and stored.

3,701,985

FIRE DETECTION SYSTEM AND UNIT

John S. Davies, 1010 Norumbega Drive, Monrovia, Calif.

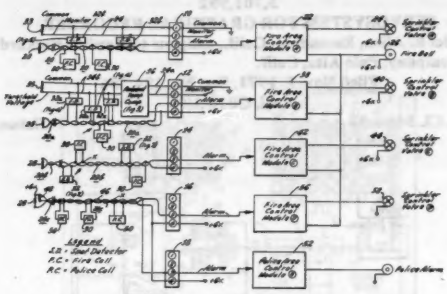
Continuation-in-part of Ser. No. 735,006, June 6, 1968, abandoned. This application April 5, 1971, Ser. No. 131,122

Int. Cl. G08b *17/06*

U.S. Cl. 340—228 **4 Claims**

A fire detection system includes an elongated heat sensing element which may be extended throughout the area to be protected, and it also includes a multiplicity of spot detector units which are spaced along the heat sensing element at criti-

cal points in the area to be protected. The spot detector units respond instantaneously to abnormal temperature conditions



to complete an electric circuit through the aforesaid heat sensing element for alarm and control purposes.

3,701,986

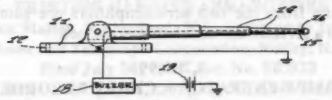
ALERT-GUARD

Sterling Mosley, and Hosea Jackson, both of 1408 Magnolia Street, North Little Rock, Ark.

Filed July 31, 1967, Ser. No. 657,267

Int. Cl. G08b 21/00

U.S. Cl. 340—279 **2 Claims**



A warning signal device for motorists to alert a driver, who is starting to fall asleep, the device including a telescoping rod that would activate a buzzer or other alarm connected in an electrical circuit.

3,701,987

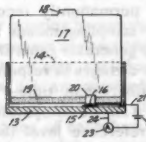
MISPLACED FILE INDICATING SYSTEM

John S. Leighton, 10830 40th Avenue North, Minneapolis, Minn.

Filed Aug. 16, 1971, Ser. No. 172,119

Int. Cl. G08b 21/00

U.S. Cl. 340—280 **8 Claims**



A system is provided for electrically indicating that an error in filing has taken place. In one form, the file container is metal and serves as one electrode. An insulated bus bar is diagonally positioned across the file bearing surface. A circuit is formed by the file container, a power source, alarm and bus bar and is completed when a conductive lower edge of the file folder is misfiled. When in the proper position an insulator over the appropriate portion of the conductive edge of the file folder keeps the file folder from completing the circuit.

3,701,988

CHARACTER DISPLAY DEVICE FOR TELEVISION MONITOR

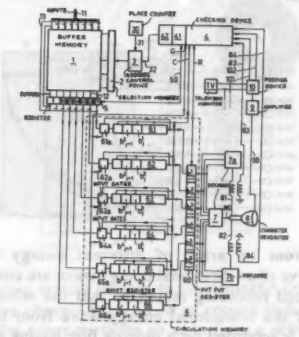
Houterman Jan Allaart, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 14, 1969, Ser. No. 799,396

Claims priority, application Netherlands, Feb. 14, 1969, 6802281

Int. Cl. G06f 3/14

U.S. Cl. 340—324 A **4 Claims**



A device for displaying digital information in the form of characters on a television screen comprising a circulation memory in which the information for a line of characters circulates and in which during the display on a screen of a normal television monitor the information of the characters for a line is available per picture line at the output of the circulation memory for forming in a character generator control signals for producing dots on the television screen dependent upon the parts of the characters to be displayed on one line and coinciding with the picture line to be written at that instant, and in which during a space time between lines of characters the circulation memory is provided with information for a following line of characters from a buffer memory.

3,701,989

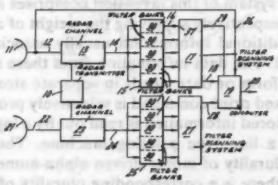
CENTROID SEEKING METHOD FOR DETERMINING AZIMUTH AND ELEVATION ANGLE SIMULTANEOUSLY

Charles D. Calhoon, Sr., Catonsville; Louis P. Goetz, Linthicum, and Harry B. Smith, Baltimore, all of Md., assignors to The United States of America as represented by the Secretary of the Navy

Continuation-in-part of Ser. No. 20,233, April 5, 1960, abandoned. This application April 5, 1963, Ser. No. 271,557

Int. Cl. G01s 9/02

U.S. Cl. 343—16 R **4 Claims**



The invention relates to a radar system for determining azimuth and elevation simultaneously. The invention utilizes two radar channels and an antenna having a single reflector and offset feeds which transmit two lobes of energy simultaneously. Reflected energy returning from a target will be intercepted by the upper lobe, lower lobe or both lobes. As the antenna sweeps and the lobe of energy intercepts the target, a number of cycles of transmission-reception and filter scanning is obtained. The respective counts of each channel of received lobe energy is compared and the result of this comparison

represents the elevation of the target. Moreover, the system processes the received information to obtain the azimuth location of the target.

3,701,990

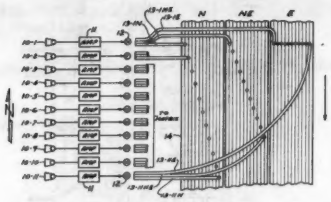
FIBER OPTIC DISPLAY DEVICE

Fordyce E. Tuttle, deceased, late of 1017 North Lake Way, Palm Beach, Fla. (by Eleanor Porter Tuttle, executrix)

Filed Dec. 23, 1969, Ser. No. 887,567

Int. Cl. G01d *5/26*

U.S. Cl. 346—1 **7 Claims**



Signals from an array of different energy transducers representative of a vibrational energy wave are correlated in a predetermined recording matrix so that the relative azimuth direction of the vibrational energy wave from the array of transducers is recorded on a moving film having a speed that compensates for that of the moving vibrational energy wave to provide a final display having readily identifiable directional information of the received vibrational energy wave. Transducer signals are transferred from the transducers to a matrix pattern with the use of fiber optical elements.

3,701,991

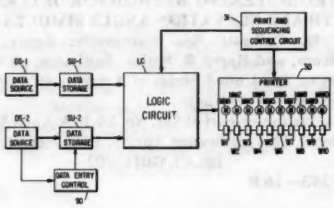
ELECTRONIC CONTROLS FOR ALPHANUMERIC PRINTER

Richard Dennis Livesey, Pointe Claire, Quebec, Canada, assignor to Robert Morse Corporation Limited, West Montreal, Quebec, Canada

Filed May 28, 1970, Ser. No. 41,429

Int. Cl. G01g *23/38*

U.S. Cl. 346—9 **22 Claims**



The recording system of this invention comprises a plurality of data sources respectively supplying the weight of a weighed out load and additional information usually associated with the weighed load. The data information from these sources is stored in coded form or data words in separate storage units until a read-out and print command is selectively produced, at which time the stored information is read out by a logic circuit and printed by a line type printing machine. The printing machine has a plurality of motor driven alpha-numeric printing wheels, and there is a corresponding plurality of counters in the logic circuit. Each data word read out from storage is loaded into one counter, and the counters then count down to zero or some other reference value. During the countdown, clock pulses are conducted to operate the printing wheel motors, thereby advancing the print wheels. When each counter reaches zero or other reference value, the passage of clock pulses for driving the associated print wheel motor is inhibited, thus stopping advancement of the associated printing wheel at its proper printing position. The logic circuit further provides for the printing of a plurality of lines with the same set of printing wheels by reading out the stored information sequentially according to the lines of print and by re-positioning the printing wheels after each line of print.

3,701,992

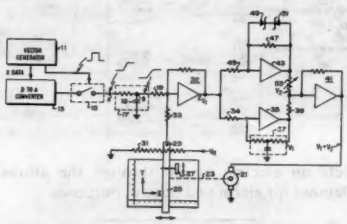
SERVOSYSTEM FOR GRAPHICAL RECORDER

Daniel E. Allen, Escondido, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 1, 1971, Ser. No. 194,386

Int. Cl. G01d *3/06*

U.S. Cl. 346—32 **7 Claims**



An X-Y graphical recorder has a moving pen which is moved along each axis by a position feedback servosystem responsive to digital data from a vector generator. The servosystem includes two parallel connected operational amplifiers, one of which provides an output proportional to analog pen position control signals and the other of which produces a constant level output in response to any pen position control signal greater than the predetermined low value. The outputs from the two servoamplifiers are summed and coupled to a servomotor which drives the pen.

3,701,993

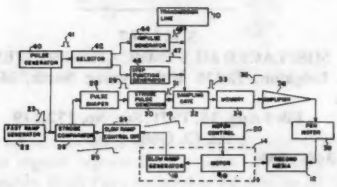
RAMP GENERATOR A CHART RECORDER

Leonardus Johannes Geerling, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed June 28, 1971, Ser. No. 158,922

Int. Cl. G01d

U.S. Cl. 346—33 R **8 Claims**



A ramp generator for a chart recorder or the like and a chart recorder for permanently recording information on recording media by sampling means for sampling signals is described. The ramp generator generates a ramp signal whose magnitude gradually changes in response to movement of the recording media rather than time. The ramp signal thus derived is applied to a strobe comparator via a slow ramp control circuit as the reference level thereof for producing a strobe pulse to drive the sampling gate and thereby sampling a signal applied thereto.

3,701,994

GASOLINE STATION ACCOUNTING SYSTEM

Coates F. Bateman, West Hartford, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

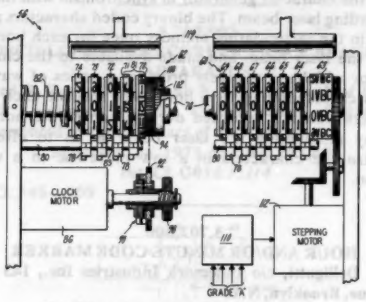
Filed Sept. 8, 1970, Ser. No. 70,342

Int. Cl. B67d *5/24*

U.S. Cl. 346—43 **4 Claims**

A gasoline station accounting system for a multiple grade gasoline station comprising a manually operable printing

recorder for each grade having coaxial totalizer and clock printing counters and manually operable to provide a single



line printout of the total volume of the grade of gasoline dispensed and the day and time of the printout.

3,701,995

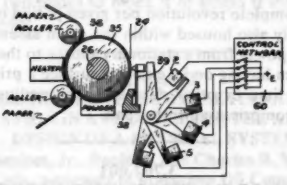
PRINTING HAMMER ARRANGEMENT

Karel Jan Staller, Rutherford, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed July 24, 1970, Ser. No. 58,022

Int. Cl. B41j *3/16;* **G03g** *19/00;* **G06k** *15/14*

U.S. Cl. 346—74 MP **7 Claims**



An arrangement for printing hammers wherein a plurality of pivotably mounted hammers are provided, the hammers being divided into a plurality of sets, each hammer of a set having fist and second legs which are angularly displaced from one another by a fixed amount, this fixed amount being different for each set. The first leg of each hammer is positioned adjacent a recording device and the second leg of each hammer is positioned adjacent a selectively actuable electromagnet. The actuation of an electromagnet causes the movement of the associated hammer thereby causing the recording of information. In one embodiment the recording device includes a platen, paper and an inked ribbon provided adjacent the first legs of the hammers, the first legs striking the ribbon thereby imprinting a mark on the paper.

In another embodiment the recording device includes a magnetizable drum and the first leg of each hammer is aligned with a magnetic actuator, the movement of the first leg causing movement of the magnetic actuator, thereby providing a magnetic mark on the magnetizable drum.

3,701,996

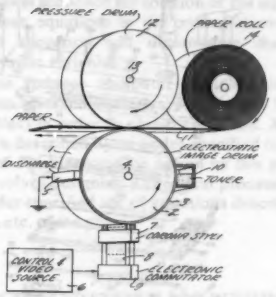
TRANSFER ELECTROSTATIC PRINTING SYSTEM

Richmond Perley, Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 2, 1970, Ser. No. 94,368

Int. Cl. G03g *15/16, 15/20, 15/22*

U.S. Cl. 346—74 ES **4 Claims**



This printing system utilizes an electrostatic drum to selectively receive charges from a row of corona styli, the charges attracting dry toner particles so as to form a selective row of dots, a plurality of dot rows capable of presenting an image of language text or a plot of graphical information. The toner is embedded in the image receiving paper as the paper passes between the electrostatic image drum and a cooperating pressure drum. Auxiliary transfer processes, heat or moisture and charge/selective erase processes are all eliminated.

3,701,997

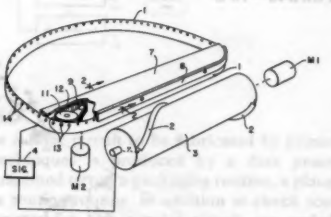
FACSIMILE RECORDER AND MOVING ELECTRODE THEREFOR

Frederick W. Simpkins, Husdon, Mass., assignor to Alden Research Foundation

Filed March 30, 1971, Ser. No. 129,518

Int. Cl. G01d *15/06;* **B01k** *3/04*

U.S. Cl. 346—74 E **4 Claims**



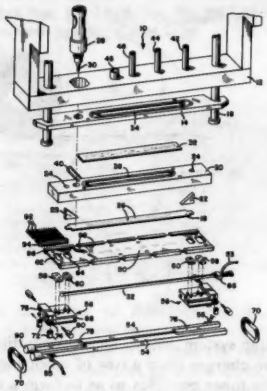
A facsimile recorder marks a paper impregnated with electrolyte and a lake former by migration of ions from an endless loop metal electrode to the paper when electrical current is passed from the electrode to a cooperative electrode through the recording paper pressed therebetween. The loop electrode is fed through a track which holds a portion of it straight where it opposes the cooperative electrode, and has a coating of fine molybdenum-containing material bonded to its surface to prevent the accumulation and adhesion of lake on the loop electrode which would impede free feed of the loop electrode through the track.

3,701,998

TWIN ROW DROP GENERATOR

Garland V. Mathis, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Oct. 14, 1971, Ser. No. 189,298
Int. Cl. G01d *15/18*
U.S. Cl. 346—75 **3 Claims**



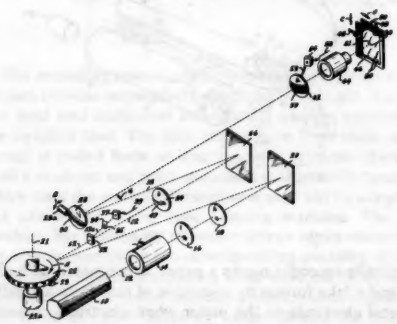
A drop generator in which two rows of orifices are formed in an orifice plate to cause two rows of drops to be generated from a single drop generating head. The drops pass through two corresponding rows of charge rings and then pass on opposite sides of an electrically conductive strip which, in cooperation with other elements of the generator, provides an electrostatic deflecting field to deflect charged drops into drop catchers. Electrically conductive plates can be utilized in conjunction with the conductive strip to set up the deflecting field or the drop catchers can be used for this purpose.

3,701,999

COMPUTER OUTPUT LASER MICROFORM RECORDING SYSTEM

David B. Congleton, San Pedro; Donald L. Roberts, Cypress, and Pat E. Evans, Torrance, all of Calif., assignors to The National Cash Register Company, Dayton, Ohio

Filed Aug. 21, 1970, Ser. No. 65,790
Int. Cl. G06k *15/02*
U.S. Cl. 346—76 L **20 Claims**



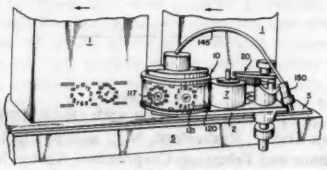
A computer output laser microform recording system which includes a recirculating memory for storing binary coded characters originating in a computer and a character generator which translates the binary coded characters to shapes for recording. The laser micro-image recorder employs a rotating polygon having a plurality of mirror faces for reflecting the laser beam as a continuous series of long horizontal scan lines. These scan lines are deflected vertically by a tilt mirror. An optical detector senses the start of the usable portion of each mirror face of the polygon to produce a horizontal sync pulse that is used to initiate circuits for controlling the transmission of binary coded characters from the recirculating memory to operate the character generator in synchronism with the moving recording laser beam. The binary coded characters are circulated in the recirculating memory once for each horizontal scan of the laser beam and made available to the character generator which successively provides a series of waveform patterns corresponding to a horizontal slice of each of the characters which is recorded during each of the horizontal scans by modulating the laser beam so as to effectively synthesize the characters in a row piecewise in a vertical direction.

3,702,000

HOUR AND/OR MINUTE CODE MARKER

Patrick Delligatti, c/o Dalemark Industries Inc., 143 Rogers Avenue, Brooklyn, N.Y.

Filed Oct. 13, 1971, Ser. No. 188,739
Int. Cl. G07c *1/02*; B41f *17/00*
U.S. Cl. 346—92 **7 Claims**



A marking device for marking moving objects with the specific time in hours and/or minutes or other continuously varying data is comprised of a revolvable carrier drum having a means for physical contact with the object for rotation thereby and biasing means to return the drum to a rest or zero position after the object is marked, said carrier drum having at least one electric motor suitably geared to a pointer to rotate a shaft one complete revolution per given period of time, a slip ring assembly also housed within the drum assembly to transmit electric power from a stationary source to the electric motor; the drum having on its external surface a printing surface designating time or other data and surrounding the pointer which also comprises a printing pad.

3,702,001

METHOD OF ELECTROSENSITIVE PRINTING OR RECORDING AND APPARATUS THEREFOR

Teresio Gassino, and Alfredo Olivei, both of Ivrea, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea(Torino), Italy

Filed April 15, 1970, Ser. No. 28,565
Claims priority, application Italy, April 15, 1969, 51426 A/69; April 15, 1969, 51465 A/69
Int. Cl. G01d *15/06, 15/34*
U.S. Cl. 346—74 E **17 Claims**

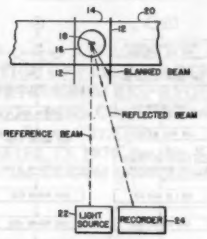
A method and apparatus for electrosensitive printing or recording on a trackless, untreated paper sheet which utilizes a head consisting of a pair or series of pairs of electrodes

located on the same side of the paper sheet, the electrodes of each pair being opposite in polarity and the head being coupled to a device for impregnating the paper sheet with an electrolytic solution immediately before printing or recording thereon.

3,702,002
OSCILLOGRAPH RECORDER TRACE BLANKER APPARATUS

Richard R. Taylor, and Frank A. MacKay, both of Riverside, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Nov. 24, 1971, Ser. No. 201,694
Int. Cl. G01d *15/14*
U.S. Cl. 346—109 **4 Claims**

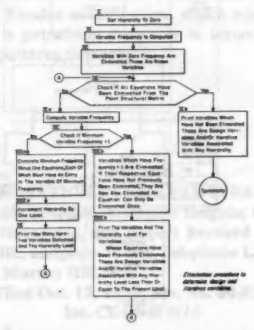


Electromechanical apparatus for blanking galvanometer traces and which can be used to advantage in high-speed computer data systems which include multi-channel oscilloscope recorders. A galvanometer is positioned symmetrically between two non-magnetic flat plates which are parallel to the galvanometer reference beam. The two plates are spaced apart a distance sufficient to allow the galvanometer reference beam to be deflected a selectively predetermined amount in each direction from the center of the galvanometer during unblanked operation. During blanked operation, electrical circuitry, which can be actuated locally or remotely, removes normal excitation from the galvanometer and energizes its with a blanking signal which deflects the reference beam onto one of the two plates to block it or shield it from the oscillograph recorder.

3,702,003
ALGORITHM TO MINIMIZE ITERATIVE COMPUTATION IN A PROCESS FOR THE ANALYSIS OR DESIGN OF A PHYSICAL SYSTEM

W. Fred Ramirez, Jr., Boulder, and Charles R. Vestal, Denver, both of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Oct. 9, 1970, Ser. No. 79,579
Int. Cl. G06f *15/32, 15/46*
U.S. Cl. 444—1 **9 Claims**



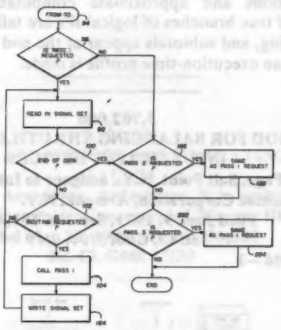
A process is described for the solution of a system of algebraic equations. A general purpose computer is programmed to perform the steps of the process. These steps include (1) forming a consolidated matrix descriptive of the entire system of equations and variables, (2) identifying design (specified) variables and/or iterative variables by a unique elimination procedure so as to minimize the number of iterative variables and to minimize the number of relations which must be solved simultaneously (i.e. minimize nested iterative calculations), (3) using a calculation procedure to determine the computational sequence for solution of the equations, and (4) solving these equations in the order determined by the computational sequence and determining the numerical values of the system variables.

This process reduces computer computation time and identifies those essential variables which must be specified (design variables) in order to obtain a solution. Any physical system which is described by an under-specified or adequately specified set of equations can be solved by this process. One application involves designing a chemical processing plant by solving an under-specified set of equations descriptive of the units, streams, etc. of the plant.

3,702,004
PROCESS AND SYSTEM FOR ROUTING INTERCONNECTIONS BETWEEN LOGIC SYSTEM ELEMENTS

Mark F. Eskew, Richardson, and Beverly F. Hyde, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 8, 1970, Ser. No. 1,525
Int. Cl. G06f *15/20*
U.S. Cl. 444—1 **22 Claims**

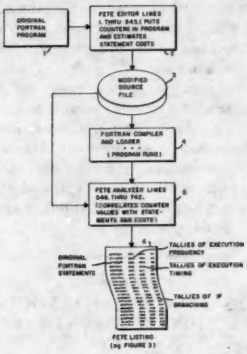


Artwork for a logic circuit to be fabricated by printed circuit board techniques is produced by a data processing machine programmed to run a packaging routine, a placement routine, and a routing routine, in addition to check routines. All logic elements for a particular circuit are coded and identified prior to carrying out any of the machine run routines. This circuit diagram information, along with mechanical criteria of the printed circuit board on which the circuit is to be fabricated, are supplied as input data to the data processing machine. The data processing machine first takes the coded circuit diagram information and checks it for errors. It then packages the individual logic elements into multi-element units (integrated circuits). Upon completion of the packaging routine, the data processor places the multi-element units within the limits of the mechanical criteria supplied as input data. After the packaging and placing routines have been completed, the machine routes interconnections between the terminal pins of the multi-element units using a numbered ordered maze restrained to proceed within pre-established limits.

3,702,005
EXECUTION TIME ANALYZER

Daniel H. H. Ingalls, Jr., Menlo Park, Calif., assignor to United Data Services, Palo Alto, Calif.

Filed May 24, 1971, Ser. No. 146,353
Int. Cl. G06f *15/26, 9/06, 11/00*
U.S. Cl. 444—1 **9 Claims**

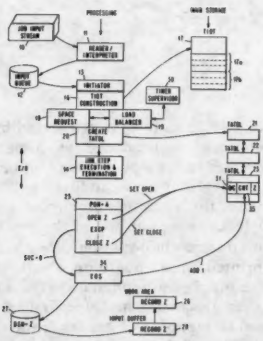


The Fortran Execution Time Estimator (FETE) for software monitoring and performance evaluation is a three-step process. The first step accepts FORTRAN IV source programs and produces an edited file with counters and flags. The second step executes the edited file. After execution, the third step re-reads the edited file and correlates it with the final counter values to provide a listing. The executable statements are collected and appear in the listing beside the exact number of executions and approximate computation time. The number of true branches of logical IFs are tallied on the right of the listing, and subtotals appear at the end of each routine for which an execution-time profile is made.

3,702,006
METHOD FOR BALANCING THE UTILIZATION OF INPUT/OUTPUT DEVICES

Josiah B. Page, Salt Point, N.Y., assignor to International Business Machine Corporation, Armonk, N.Y.

Filed June 9, 1971, Ser. No. 151,452
Int. Cl. G06f *3/04, 9/19*
U.S. Cl. 444—1 **23 Claims**

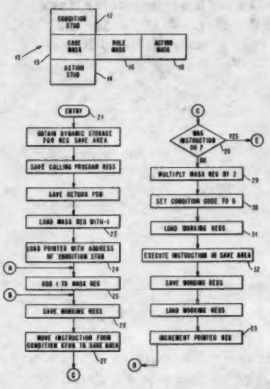


During the operation of a data processing system capable of multi-tasking, a count is made of the number of times each I/O device is accessed by each task. The counting is done over the time interval between successive allocation routines. During each allocation, an analysis is made using the count and time interval to estimate the utilization of each device due to the current tasks. An estimate is also made of the anticipated utilization due to the task undergoing allocation. The estimated current and anticipated utilization are then considered and an attempt is made to allocate data sets to the least utilized I/O devices so as to achieve balanced I/O activity.

3,702,007
TABLE DRIVEN PROGRAM

Roderic A. Davis, II, Pleasant Valley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 7, 1970, Ser. No. 95,747
Int. Cl. G06f *9/12, 7/22*
U.S. Cl. 444—1 **6 Claims**

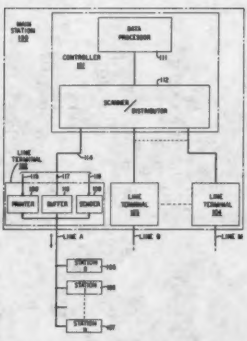


A new decision table and method of using the decision table with data processing apparatus are disclosed. A general purpose driver is provided for executing various decision tables. When a problem program reaches the point where a decision table is to be executed, the problem program calls the driver and identifies the selected decision table. The condition stub of the decision table includes a series of instructions from which the driver forms a condition mask. The driver selects the appropriate action according to the condition mask and a set of rules and an action stub in the decision table. The action may comprise a single instruction or series of related instructions or several independent instruction or groups of instructions.

3,702,008
PROGRAM FOR POLLING PARTY LINE DATA STATIONS FOR MESSAGE PICKUPS

George Stephen Groth, Freehold, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 7, 1970, Ser. No. 95,737
Int. Cl. H04j *3/12*
U.S. Cl. 444—1 **13 Claims**



Data stations on multistation lines are polled for messages in accordance with a program which directly varies the number

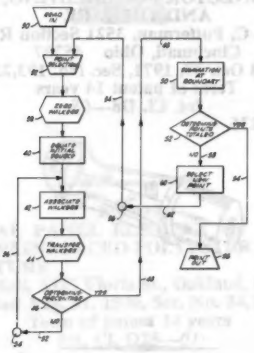
of times each station is polled during a polling round with the quantity of messages available at the station, as determined by responses to prior pollings. Initially, all stations are polled and the identities of those having available messages are placed in a data pattern defining an alternate poll code sequence. The alternate sequence is then utilized for subsequent polling rounds during which the data pattern is modified by wiping out the identities of stations no longer having messages. After a predetermined number of alternate rounds or after all the messages are collected, whichever occurs first, the initial polling round is again sent and the process repeated. Data processing is provided by a programmed general purpose computer.

3,702,009

SIMULATION OF PRESSURE BEHAVIOR IN PETROLEUM RESERVOIRS

David E. Baldwin, Jr., Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Oct. 23, 1970, Ser. No. 83,393
Int. Cl. G06f *15/20, 15/06*
U.S. Cl. 444—1 **1 Claim**



A method for formulating a simple model in simulation of pressure behavior in a petroleum reservoir, the method consisting of utilization of electronic data processing apparatus for performing a novel computational approach to establishment of unknown pressure quantities as deduced from probabilities of known parameters. The method utilizes a variation on the Monte Carlo or Random Walk technique, a variation known as the Exodus modification, which enables stochastic simulation of a petroleum reservoir in terms of its pressure behavior and patterns throughout.

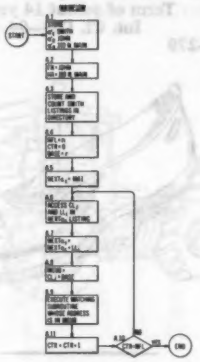
3,702,010

INFORMATION RETRIEVAL STRATEGY

Robert Benjamin Schmidt, Arlington Heights; George Wallace Smith, Jr., Naperville, and Robert Bernard Walford, Lombard, all of Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 12, 1970, Ser. No. 80,036
Int. Cl. G06f *9/16*
U.S. Cl. 444—1 **7 Claims**

A method for retrieving variable length file listings from a file of listings is disclosed. Each listing in the file is identified as belonging to one of the plurality of classes of listings comprising the file by means of a fixed length class byte in the listing format. The length of each listing is recorded in a similar fashion in the listing format. A computer program containing a matching subroutine for each class of listing contained in the file controls a stored program computer during a search of the



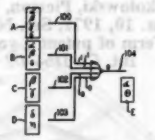
file. During such a search, the computer accesses the class byte in the current listing being processed and uses this byte to determine the address of the matching subroutine to be used in processing the listing. Similarly, the computer uses the length byte in the current listing to calculate the address of the listing to be processed after processing of the current listing is completed.

3,702,011

APPARATUS AND METHOD FOR SIMULATING LOGIC FAULTS

Douglas Byron Armstrong, Bedminster, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 12, 1970, Ser. No. 36,581
Int. Cl. G06f *15/20*
U.S. Cl. 444—1 **14 Claims**

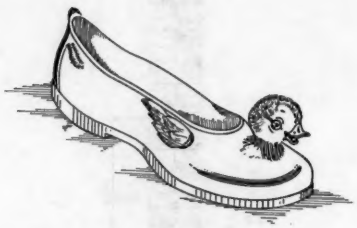


Apparatus and method for simulating logic circuit faults. The logic circuit to be simulated is divided into blocks and digital representations of the interconnections in each block are stored in data tables in the digital computer performing the simulation. Each block is dynamically simulated by computing both the error-free outputs and the faulty outputs that would be generated by the block in response to the proper inputs to the block. The result of the simulation is a list of system faults which may be transformed into a fault dictionary comprising a list of each possible trouble symptom and the set of faults that produce it.

DESIGNS

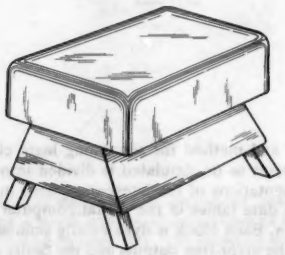
OCTOBER 31, 1972

224,992
OVERSHOE
Mary K. Iskyan, 34—15 74th St., Jackson Heights, N.Y. 11372
Filed Dec. 14, 1970, Ser. No. 26,459
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—279

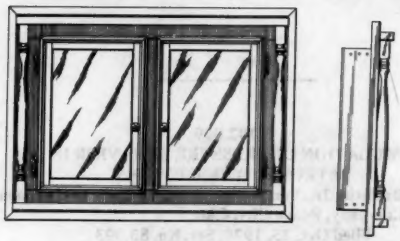


224,993
PILLOW OR SIMILAR ARTICLE
Linda Ellen Levine, 7530 Stonecrest, and Deborah Ann Zippel, 4407 Mill Run, both of Dallas, Tex. 75222
Filed Mar. 17, 1971, Ser. No. 125,467
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D3—9

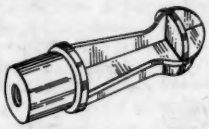
224,994
ADJUSTABLE LEG REST
Henry J. Sokolowski, Pierson, Iowa 51048
Filed Mar. 10, 1971, Ser. No. 123,130
Term of patent 7 years
Int. Cl. D6—*02*
U.S. Cl. D6—32



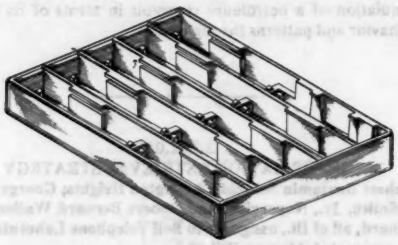
224,995
BATHROOM CABINET
Clarence E. Harrison, 612 E. Farmers Road, Seagoville, Tex. 75159
Filed Sept. 21, 1970, Ser. No. 25,103
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—127



224,996
POLE CONNECTOR FOR SHELVING, RACKS, AND THE LIKE
Joseph C. Putterman, 3521 Section Road, Cincinnati, Ohio 45237
Filed Oct. 27, 1971, Ser. No. 193,238
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—236

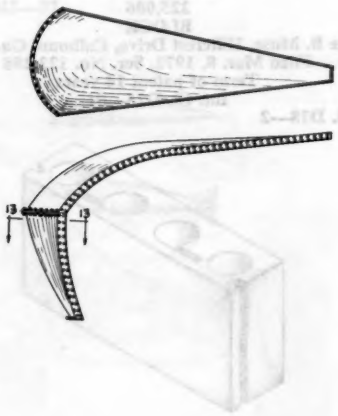


224,997
COMBINED PACKAGING AND DISPENSING TRAY FOR RAZOR BLADE CARTRIDGES
Richard J. Petrillo, Norwell, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Mar. 15, 1971, Ser. No. 124,645
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—187

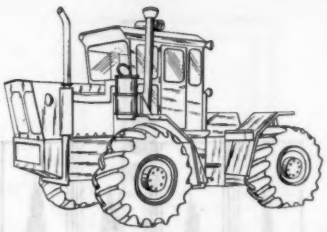


224,998
TOOTHPASTE TUBE
Van Vechten Sayre, Chatham Township, Morris County, and Hugh R. Kirkpatrick, New Vernon, N.J., and Harry Zelenko, New York, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.
Filed May 26, 1971, Ser. No. 147,291
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—194

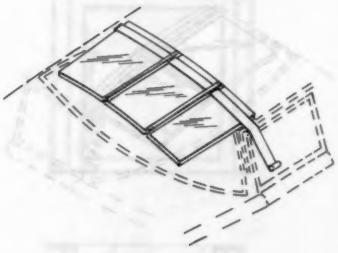
224,999
SECTIONAL PANEL ELEMENT OF A FIBERGLASS REINFORCED POLYESTER HOUSING STRUCTURE
Christopher Hall, 6321 Floria St., Oakland, Calif. 94618
Filed Aug. 31, 1970, Ser. No. 24,780
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1



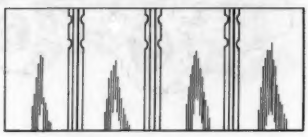
225,000
FOUR WHEEL TRACTOR
Erval D. Jackson, R.R. 2, Edgely, N. Dak.
Filed Apr. 13, 1970, Ser. No. 22,386
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D14—3



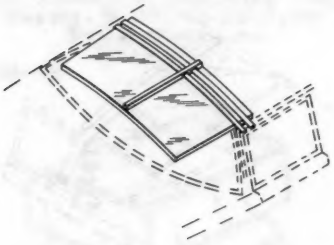
225,001
AUTOMOBILE RAIN VISOR FOR DRIVE-IN THEATRES
John P. Francis, 20 Boston St., Haverhill, Mass. 01830
Continuation-in-part of design application Ser. No. 19,923, Nov. 4, 1969. This application Aug. 12, 1970, Ser. No. 24,437
Term of patent 14 years
The portion of the term of the patent subsequent to Dec. 15, 1984, has been disclaimed
Int. Cl. D12—*16*
U.S. Cl. D14—6



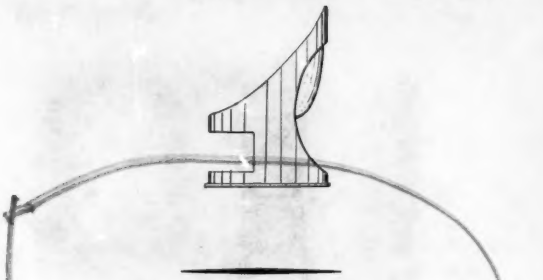
225,002
FOLDING RAIN VISOR FOR AUTOMOBILES
John P. Francis, 20 Boston St.,
Haverhill, Mass. 01830
Continuation-in-part of design application Ser. No. 19,923, Nov. 4, 1969. This application Aug. 17, 1970, Ser. No. 24,536
Term of patent 14 years
The portion of the term of the patent subsequent to Dec. 15, 1984, has been disclaimed
Int. Cl. D12—*16*
U.S. Cl. D14—6



225,003
AUTOMOBILE RAIN VISOR FOR DRIVE-IN THEATRES
John P. Francis, 20 Boston St.,
Haverhill, Mass. 01830
Continuation-in-part of design application Ser. No. 19,923, Nov. 4, 1969. This application Aug. 31, 1970, Ser. No. 24,775
Term of patent 14 years
The portion of the term of the patent subsequent to Dec. 15, 1984, has been disclaimed
Int. Cl. D12—*16*
U.S. Cl. D14—6

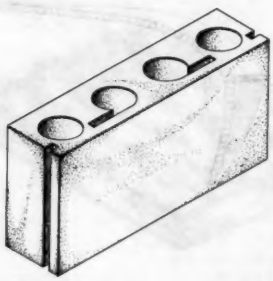


225,004
BABY SEAT
Giuseppe Gigante, % Dr. Ing. Misitano A.9,
Via Padova 217–20127, Milan, Italy
Filed Feb. 12, 1971, Ser. No. 115,145
Term of patent 3½ years
Int. Cl. D6—*02*
U.S. Cl. D15—1

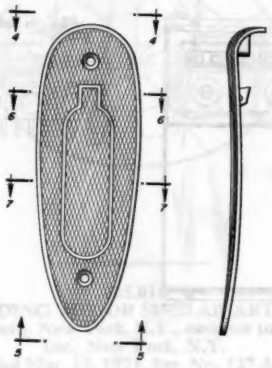


225,005
DEVICE FOR ELECTROCHEMICAL ANALYSIS
Robert L. Greene, Diamond Bar, Calif., assignor to Beckman Instruments, Inc.
Filed Feb. 22, 1971, Ser. No. 117,849
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D16—2

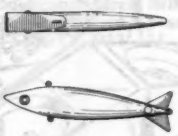
225,006
BLOCK
George B. Muse, Hillcrest Drive, Calhoun, Ga. 30701
Filed Mar. 8, 1971, Ser. No. 122,258
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2



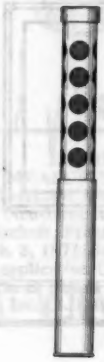
225,007
GUN BUTT PLATE
Calvin J. Albright, Jr., P.O. Box 695, Bishop, Calif. 93514
Filed Oct. 26, 1970, Ser. No. 25,635
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—7



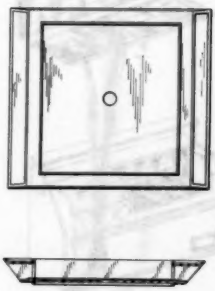
225,008
FISHING LURE
Carl R. Cordell, Jr., 215 Idlewood Drive, Hot Springs, Ark. 71901
Filed Dec. 4, 1970, Ser. No. 26,298
Term of patent 14 years
The portion of the term of the patent subsequent to Feb. 20, 1982, has been disclaimed
Int. Cl. D22—*05*
U.S. Cl. D22—27



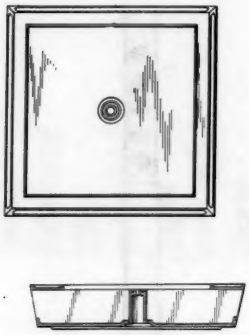
225,009
VAPORIZER
Wilhelm Buhren, Blaricum, Netherlands, assignor to United States Philips Corporation
Filed July 10, 1970, Ser. No. 23,891
Claims priority, application Switzerland Jan. 12, 1970
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—149



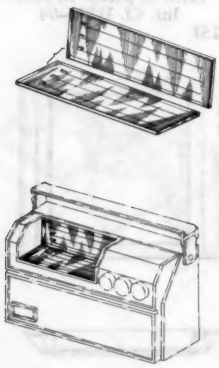
225,010
EXHAUST FAN COVER
Robert E. Steiner, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis County, Mo.
Filed Jan. 21, 1971, Ser. No. 108,675
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—151



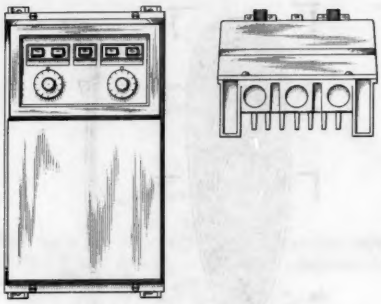
225,011
EXHAUST FAN COVER
Robert E. Steiner, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis County, Mo.
Filed Jan. 21, 1971, Ser. No. 108,690
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—151



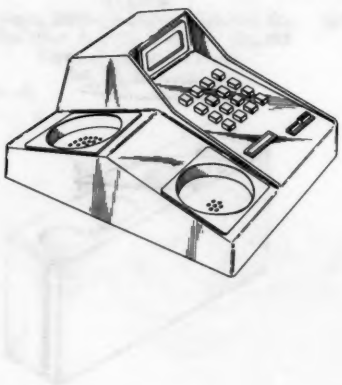
225,012
TRANSVERSE RADIO TUNING INDICATOR FACE PLATE
Maurice D. Katz, 35 Broadway, Lawrence, N.Y. 11559
Filed Mar. 12, 1971, Ser. No. 123,929
Term of patent 14 years
Int. Cl. D14—*03, 99*
U.S. Cl. D26—1



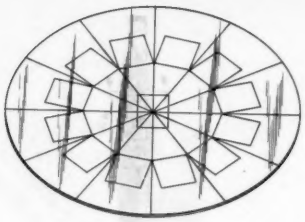
225,013
CABINET FOR AN ELECTRONIC APPARATUS
Earl K. Stewart, Scotia, N.Y., assignor to General Electric Company
Filed June 23, 1971, Ser. No. 156,148
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—5



225,014
STOCK QUOTATION TERMINAL
Harold M. Weinberg, Villanova, Pa., assignor to Sonex, Inc., Philadelphia, Pa.
Filed Jan. 29, 1971, Ser. No. 111,164
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

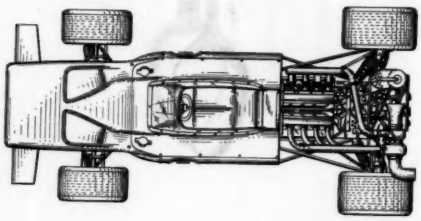


225,015
FORTUNE INDICATING CHART
Cecelia Donihue, 2426 E. Osborn, Salt Lake City, Utah 85016
Filed Mar. 29, 1971, Ser. No. 129,322
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



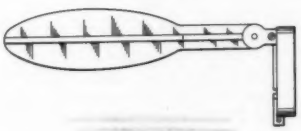
225,016
BUILDING TOY OR SIMILAR ARTICLE
Arthur Halpern, New York, N.Y., assignor to M. I. Sales, Inc., New York, N.Y.
Filed Mar. 23, 1971, Ser. No. 127,443
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

225,017
MODEL RACING CAR
Bruce Leslie McLaren, Surrey, England, assignor to Bruce McLaren Motor Racing Limited, Colnbrook, England
Filed May 22, 1970, Ser. No. 23,108
Claims priority, application Great Britain Nov. 27, 1969
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



225,018
FINGER RING
Leonard Shiman, Millburn, N.J., assignor to Shiman Manufacturing Co., Inc., Newark, N.J.
Filed Apr. 5, 1971, Ser. No. 131,565
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10

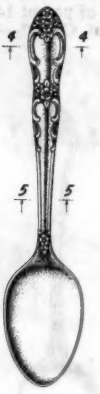
225,019
HEIGHT MEASURING RULER OR SIMILAR ARTICLE
Robert Oberheim, Neu-Isenburg, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany
Filed Feb. 8, 1971, Ser. No. 113,806
Claims priority, application Germany Aug. 19, 1970
Term of patent 3½ years
Int. Cl. D10—*04*
U.S. Cl. D52—6



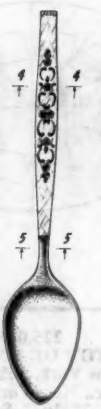
225,020
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed July 8, 1971, Ser. No. 160,968
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

225,021
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed July 8, 1971, Ser. No. 160,969
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

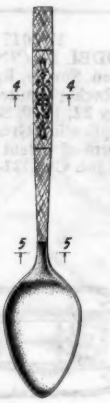
225,022
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed July 8, 1971, Ser. No. 160,971
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



225,023
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed July 8, 1971, Ser. No. 160,972
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

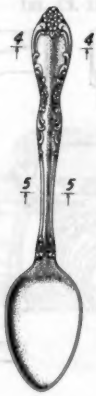


225,024
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed July 8, 1971, Ser. No. 160,973
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

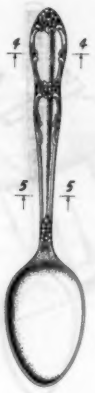


225,025
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed July 8, 1971, Ser. No. 160,976
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

225,026
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed July 8, 1971, Ser. No. 160,977
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

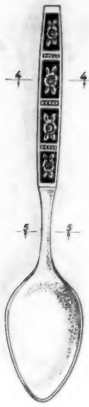


225,027
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed July 8, 1971, Ser. No. 160,978
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

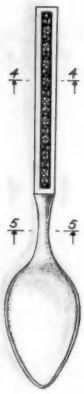


225,028
SPOON OR SIMILAR ARTICLE
Melvin A. Lea, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed July 8, 1971, Ser. No. 160,982
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

225,029
SPOON OR SIMILAR ARTICLE
Colin B. Richmond II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Nov. 8, 1971, Ser. No. 196,851
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

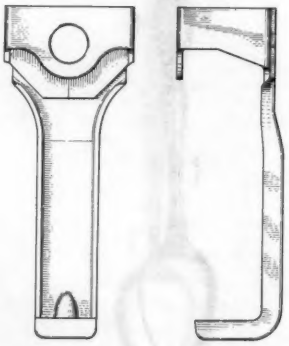


225,030
SPOON OR SIMILAR ARTICLE
Frank R. Perry, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed July 23, 1971, Ser. No. 165,885
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

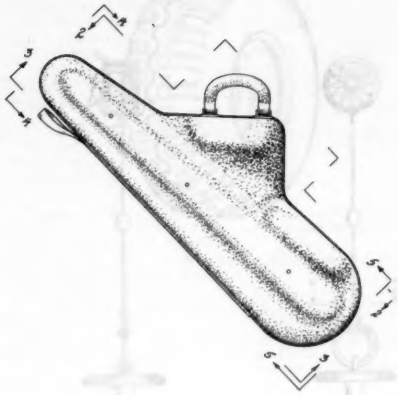


225,031
MACHINE FOR ASSEMBLING BUTTONS
Malcolm J. Roebuck, La Salle, Ill., assignor to First National Bank in Peru
Filed Mar. 4, 1971, Ser. No. 121,232
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1

225,032
OVERHEAD CONVEYOR BRACKET
George E. Gonsalves, Brooklyn, and Felice Dosso, Staten Island, N.Y. (both of 623 Bergen St., Brooklyn, N.Y. 11238)
Filed July 31, 1970, Ser. No. 24,248
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D55—1

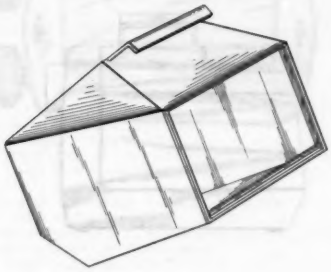


225,033
MUSICAL INSTRUMENT CARRYING CASE
Ray Hyman, 2046 Waverly St., Philadelphia, Pa. 19146
Filed Mar. 5, 1971, Ser. No. 121,623
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D56—1



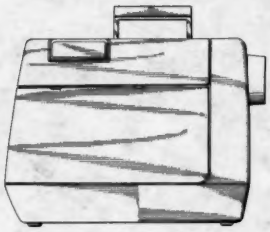
225,034
SINGLE LENS REFLEX CAMERA
Kyusei Kanno, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Oct. 22, 1970, Ser. No. 25,597
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1

225,035
MICROFILM READER HOUSING
Jasper S. Chandler and Stephen P. Hines, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 1, 1971, Ser. No. 130,553
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1

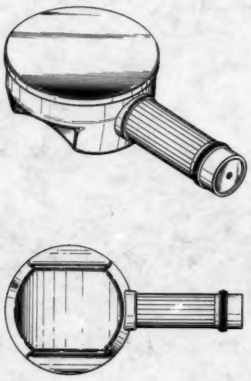


225,036
ADDING MACHINE
James J. Bienkowski, East Syracuse, and John T. Houlihan, Manlius, N.Y., assignors to SCM Corporation, New York, N.Y.
Filed July 8, 1971, Ser. No. 160,966
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11

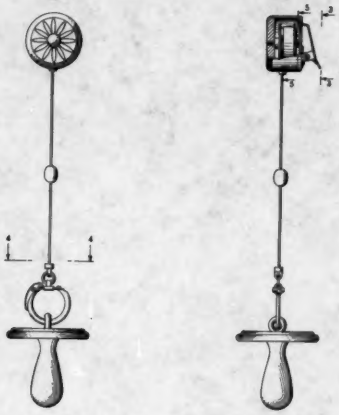
225,037
PORTABLE SEWING MACHINE
Wayne A. Current, Cranford, N.J., assignor to The Singer Company, New York, N.Y.
Filed Mar. 1, 1971, Ser. No. 120,073
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—1



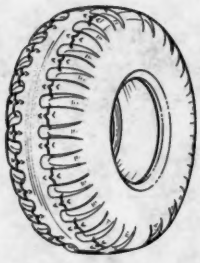
225,038
PORTABLE MASSAGER
Lester M. Cutler, Roslyn Heights, and Paul Friedman, Old Westbury, N.Y., assignors to Vibra-Baths Home Products, Inc.
Filed July 15, 1971, Ser. No. 163,133
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D83—1



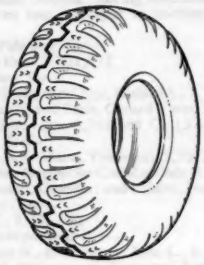
225,039
RETRACTIBLE CLIP-ON PACIFIER
Irene Sauritis, 710 Richfield Ave., Kenilworth, N.J. 07033
Continuation-in-part of design application Ser. No. 24,269, Aug. 3, 1970. This application Nov. 30, 1971, Ser. No. 203,392
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D83—8



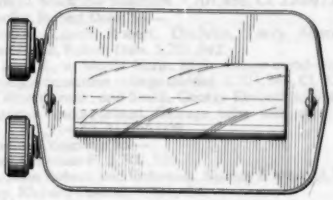
225,040
TIRE
Louis Marick, Grosse Pointe Farms, Mich., assignor to the United States of America as represented by the Secretary of the Army
Filed June 30, 1971, Ser. No. 158,669
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



225,041
TIRE
Louis Marick, Grosse Pointe Farms, Mich., assignor to the United States of America as represented by the Secretary of the Army
Filed June 30, 1971, Ser. No. 158,668
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



225,042
ROUTE HOLDER OR SIMILAR ARTICLE
Larry Lee Pierce, Flagview Park I–A, Douglasville, Ga. 30134
Filed Feb. 8, 1971, Ser. No. 113,807
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—9



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 31ST DAY OF OCTOBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aasted, Kai Christian Sophus. Storing mechanism for use in transferring objects from one conveyor to another. 3,701,406, Cl. 198-20.000.

AB Gustavsbergs Fabriker: *See—*
Eklund, Sven Emil, 3,701,472.

Abbott Laboratories: *See—*
Jones, Peter Hadley; and Iyer, Kishori S., 3,701,770.
Swett, Leo Ralph; and Paris, Gerard Yvon, 3,701,785.

Abdo, Joseph T. Slide valve. 3,701,365, Cl. 137-625.430.

Abura, Yoshinori: *See—*
Wada, Yukio; and Abura, Yoshinori, 3,701,882.

Accumulatorenwerk Hoppecke Carl Zoellner & Sohn KG: *See—*
Sassmannshausen, Guenter; and Lahme, Norbert, 3,701,691.

ACF Industries Inc.: *See—*
Carle, Ross C., 3,701,322.

ACF Industries Incorporated: *See—*
Dugge, Richard H.; and Carney, John L., Jr., 3,701,460.

Ackerman, Daniel Whitney, to Universal Instruments Corporation. Wire wrap tool. 3,701,367, Cl. 140-119.000.

Adams, Harvey Keith, to Radco Manufacturing Co., Inc. Water ski rack. 3,701,436, Cl. 211-60.0sk.

Adams Industries: *See—*
Tilp, George E., 3,701,883.

Adaptronics, Inc.: *See—*
Barron, Roger L.; and Cleveland, Dixon, 3,701,889.

Addressograph-Multigraph Corporation: *See—*
Hellar, Martin W.; and Kiener, Michael A., 3,701,673.

Advertising Metal Display Co.: *See—*
Fischer, Jack, 3,701,577.

Aerojet-General Corporation, mesne: *See—*
Wagoner, Robert B.; and Kinghorn, John S., 3,701,458.

Aeroquip Corporation: *See—*
Richmond, Abraham W., 3,701,556.

Air Reduction Company, Incorporated: *See—*
Tsujimoto, Kazumi N., 3,701,915.

Airco, Inc.: *See—*
Gray, Bronis G., 3,701,517.

Airheart, Franklin B., to Airheat Products, Inc. Resettable, fail-safe disc brake system. 3,701,399, Cl. 188-71.800.

Airheat Products, Inc.: *See—*
Airheart, Franklin B., 3,701,399.
Martins, Samuel J., 3,701,398.

Aisin Seiki Kabushiki Kaisha: *See—*
Kawai, Shinji, 3,701,616.

Aktiebolaget Bofors: *See—*
Jacobson, Gunnar, 3,701,550.

Aktiengesellschaft fur Vogt-Patentverwertungen: *See—*
Vogt, Wilheim, 3,701,553.

Alden Research Foundation: *See—*
Simpkins, Frederick W., 3,701,997.

Aldrich Chemical Company, Inc.: *See—*
Hopps, Harvey B.; Jackman, Dennis; and Biel, John H., 3,701,786.

Alfa-Laval AB: *See—*
Nilsson, Vilgot Raymond, 3,701,469.

Allaart, Houterman Jan, to U.S. Philips Corporation. Character display device for television monitor. 3,701,988, Cl. 340-324.00a.

Allen & Hamburys Limited: *See—*
Hartley, David; Lunt, Lawrence Henry Charles; and Jack, David, 3,701,808.

Allen, Daniel E., to Hewlett-Packard Company. Servosystem for graphical recorder. 3,701,992, Cl. 346-32.000.

Allen, David Henry Odhams; Hall, Raymond Frederick; and Weston, George Frederick, to U.S. Philips Corporation. Gaseous-glow, discharge display device with an array of hollow cathodes. 3,701,918, Cl. 313-209.000.

Allen, Harold A.: *See—*
Gartman, William W.; Evans, James G.; and Allen, Harold A., 3,701,682.

Allen-Bradley Company: *See—*
Dummermuth, Ernst, 3,701,890.

Allied Chemical Corporation: *See—*
Lazarus, Stanley David; and Lofguist, Robert Alden, 3,701,757.

Allis-Chalmers Manufacturing Company: *See—*
Krumholz, Frank C., 3,701,327.

Allmanna Svenska Elektriska Aktiebolaget: *See—*
Anderson, Sture, 3,701,933.
Granstrom, Staffan N.; and Goransson, Ingemar E., 3,701,357.

Almen, Torsten H. O.; Haavaldsen, Johan; and Nordal, Vegard, to Nyegaard & Co. A/S. N-(2,4,6-triiodobenzoyl)-sugar amines. 3,701,771, Cl. 260-211.00r.

Alpes Maritines: *See—*
Froget, Pierre, 3,701,376.

Alps Electric Co., ltd.: *See—*
Kasazima, Masao, 3,701,963.

Alroy, John D. Stackable members. 3,701,456, Cl. 220-97.00c.

Altmanshofer, Robert Dale: *See—*
Kirkwood, Loren Robert; Cochran, Larry Allen; and Altmanshofer, Robert Dale, 3,701,842.

Amalric, Jean E., to Merlin Gerin. High-voltage metal-clad apparatus comprising a capacitive voltage divider. 3,701,944, Cl. 324-126.000.

Amelio, Gilbert Frank; and Smith, George Elwood, to Bell Telephone Laboratories, Incorporated. Storage tube with array on Pn Pn diodes. 3,701,914, Cl. 313-66.000.

American Can Company: *See—*
Kinkel, Christian F., 3,701,330.
Platt, John Robert; and Rohowetz, Stanley Edward, 3,701,453.
Thorp, Richard Conrad, 3,701,454.

American Cyanamid Company: *See—*
Evans, Ralph Henry, Jr.; and Holmlund, Chester Eric, 3,701,787.
Miller, Philip Andrew; and Trown, Patrick Willoughby, 3,701,774.

American Data Systems Inc.: *See—*
Stuck, Carl G.; and Wilkes, Arthur L., 3,701,856.

American Enka Corporation: *See—*
Appeldoorn, Jacques W. J.; and Sluijters, Robert, 3,701,619.

American Hydrotherm Corporation: *See—*
Teller, William M., 3,701,473.

AMP Domestic, Inc., mesne: *See—*
Murray, Robert Maclay, 3,701,966.

AMP Incorporated: *See—*
Folk, Kenneth Foster, 3,701,961.

Anders, Walter G.; and Obermiller, Herbert C., to Diebold, Incorporated. Pneumatic tube carrier construction. 3,701,497, Cl. 243-35.000.

Anderson, Duane S. Device for transmitting and displaying scores on television and radio receivers. 3,701,946, Cl. 325-64.000.

Anderson, Harold Peter; and Fenton, Francis Michael, to Bell Telephone Laboratories, Incorporated. Key telephone system call signaling and station set data transfer arrangement. 3,701,854, Cl. 179-18.0ad.

Anderson, Robert J., to Anderson, The. Particulate material drying apparatus. 3,701,203, Cl. 34-170.000.

Anderson, Sture, to Allmanna Svenska Elektriska Aktiebolaget. Device for paper machines. 3,701,933, Cl. 318-7.000.

Anderson, The: *See—*
Anderson, Robert J., 3,701,203.

Anderson, Vincent R.: *See—*
Ball, Thomas E.; and Anderson, Vincent R., 3,701,962.

Anderson, William G. Cup dispenser with revolving adapter. 3,701,457, Cl. 221-120.000.

Ando, Shizuo, to Pioneer Electronic Corporation. Adapter device for an automatic telephone answering apparatus. 3,701,850, Cl. 179-6.00c.

Andreasson, Per Arvid; and Persson, Mats Olof, to Elektriska Svetsningsaktiebolaget. Chain making apparatus. 3,701,251, Cl. 59-16.000.

Andress, William I.: *See—*
Chi, Tzu-Chiang, 3,701,522.

Appeldoorn, Jacques W. J.; and Sluijters, Robert, to American Enka Corporation. Mixing apparatus. 3,701,619, Cl. 425-198.000.

Appleman, Lucille E.: *See—*
Appleman, Milo Don, 3,701,728.

Appleman, Milo D., Jr.: *See—*
Appleman, Milo Don, 3,701,728.

Appleman, Milo Don, 50% to Terminal Testing Laboratories, Inc., 20% to Appleman, Lucille E. and 10% to Appleman, Milo D., Jr. Water purification system. 3,701,728, Cl. 210-29.000.

Arai, Hiroshi; Nakamura, Akira; Okamoto, Atutoshi; and Okumura, Shunji, to Toyota Jidosha Kogyo Kabushiki Kaisha and Nippondenso Kabushiki Kaisha. Anti-skid system for vehicles. 3,701,569, Cl. 303-21.0be.

Argue, Gary R.; and Owens, Boone B., to North American Rockwell Corporation. Solid state cell construction. 3,701,686, Cl. 136-83.000.

Armour Industrial Chemical Company, mesne: *See—*
Kinney, Layton Frederick, 3,701,744.

Armstrong, Douglas Byron, to Bell Telephone Laboratories, Incorporated. Apparatus and method for simulating logic faults. 3,702,011, Cl. 444-1.000.

Arnaud, Jose L., to FMC Corporation. Process for leaching strontium sulfide black ash. 3,701,637, Cl. 23-312.00r.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Nogami, Sumitaka; Ishigami, Masaki; and Kurita, Jiro, 3,701,816.

Asai, Norio: *See—*
Okada, Tomio; and Asai, Norio, 3,701,797.

Ashby, Carl T.; Berry, James W.; and Deutschman, Archie J., Jr., to Owens-Illinois, Inc. Recovery of copper from copper ore. 3,701,648, Cl. 75-72.000.

Ashina, Yoshiro; Oshima, Iwao; and Sekine, Kazunori, to Nitto Kagaku Kogyo Kabushiki Kaisha, a/k/a Nitto Chemical Industry Co., Ltd. and Mitsubishi Rayon Co., Ltd. Temperature control in suspension polymerisation. 3,701,761, Cl. 260-85.50r.

Ashland Oil, Inc.: *See—*
French, William H.; and Rushton, Brian M., 3,701,767.

Ashman, Leland E.; and Menashi, Wilson P., to Little, Arthur D., Inc. Treatment of surface with low-pressure plasmas. 3,701,628, Cl. 21-54.00r.

Ashtabula Bow Socket Company: *See—*
Baginski, Martin R., 3,701,291.

Ashton, Walter G.: *See—*
Meyer, Leonard; Ashton, Walter G.; and Siegele, James E., 3,701,177.

Askins, Robert E.; and Roys, George P., to Thiokol Chemical Corporation. Test apparatus for combustion evaluation. 3,701,278, Cl. 73-35.000.

Asui, Hiroshi; and Takahashi, Mitsuo, to Nippon Mining Co., Ltd. Process for obtaining nickel concentrates from nickel oxide ores. 3,701,647, Cl. 75-3.000.

Atlantic Design & Development Corporation: *See—*
Gallant, Reginald R.; Swain, Roger S.; and Waterman, Neil S., 3,701,945.

Atlantic Richfield Company: *See—*
Lease, Charles A.; Patinkin, Seymour H.; and Chlouper, Frank J., 3,701,640.

Atlas Capco Aktiebolag: *See—*
Egnelov, Gunnar Kristoffer; and Eriksson, Sune Vilhelm, 3,701,389.

ATOS Apparecchiature Oleodinamiche S.r.l.: *See—*
Tirelli, Paolo; and Saporiti, Elio, 3,701,366.

Atros Engineering Company: *See—*
Gudmestad, Ragnar, 3,701,301.

Auberry, Horace R.; and Liebscher, Anton, to Ro-Search Incorporated. Method of making footwear. 3,701,273, Cl. 12-145.000.

August Sauter KG: *See—*
Wirth, Walter; and Kuhi, Burkhart, 3,701,392.

Austin, Amory Earl; and Bechtold, Charles L., to Colgate-Palmolive Company. Means to inhibit overglaze damage by automatic dishwashing detergents. 3,701,736, Cl. 252-99.000.

Axelson, Carl A.; Hinves, John R.; Mc Gann, Elton Y.; and Johnson, Robert M. Underwate sound signal for explosive echo ranging. 3,701,319, Cl. 102-7.000.

Babcock & Wilcox Company, The: *See—*
Schanck, James L., 3,701,653.

Bacewicz, Anthony J.: *See—*
Lambert, Robert E.; Beal, Edward W.; and Bacewicz, Anthony J., 3,701,969.

Bader, Erich; Kannenberg, Karl G.; and Ricke, Hans-Benno, to Deutsche Gold- und Silber-Scheideanstalt vormal Roessler. Process for impregnating and sealing cast metal surfaces. 3,701,676, Cl. 117-49.000.

Baginski, Martin R., to Ashtabula Bow Socket Company. Bicycle pedal having luminous portions thereon. 3,701,291, Cl. 74-594.400.

Bailey, David G. Apparatus for automatically adding preselected patterns of eluent solutions to a chromatographic column and monitoring and collecting eluted fractions. 3,701,609, Cl. 210-198.00c.

Bailly, Louis. Hook for hand hooking rugs. 3,701,461, Cl. 223-102.000.

Baker, William H., to Fluoroware, Inc. Detachable handle for receptacle. 3,701,558, Cl. 294-33.000.

Baldwin, David E., Jr., to Continental Oil Company. Simulation of pressure behavior in petroleum reservoirs. 3,702,009, Cl. 444-1.000.

Ball, Thomas E.; and Anderson, Vincent R., to Honeywell, Inc. Switching device for operating a plurality of switches in sequence with ambient temperature compensation. 3,701,962, Cl. 337-101.000.

Balow, Zella J. Brassieres for mastectomy patients. 3,701,168, Cl. 3-36.000.

Banks, Robert B.: *See—*
Harris, Carl R.; Banks, Robert B.; and Soward, Dallas V., 3,701,279.

Bantz, Walter J.; and Pittaro, Richard J., to Branson Instruments, Incorporated. Magnetic anomaly detector with means for obtaining different test frequences. 3,701,941, Cl. 324-37.000.

Baranyi, Anthony J.: *See—*
Connell, Joseph A.; and Baranyi, Anthony J., 3,701,262.

Barclay, Robert, Jr.: *See—*
Matzner, Markus; Noshay, Allen; and Barclay, Robert, Jr., 3,701,815.

Barkley, John R.; O'Reilly, James J.; and Waring, Robert K., Jr., to Du Pont de Nemours, E. I., and Company. Optical line scanner using the polarization properties of ferroelectric-ferroelastic crystals. 3,701,585, Cl. 350-150.000.

Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See—*
Bauer, Karl; Martens, Gerhard; and Schiminski, Herbert, 3,701,873.
Rehn, Karl-Heinz; and Otten, Klaus Detlef, 3,701,247.
Schippers, Heinz; Hensen, Friedhelm; and Lenk, Erich, 3,701,512.
Treptow, Heinz; Frank, Benno; and Schippers, Heinz, 3,701,268.

Barnes, Charles M.: *See—*
Shutt, Paul B.; and Barnes, Charles M., 3,701,567.

Barnes, Herbert W.: *See—*
Richardson, Edwin A.; and Barnes, Herbert W., 3,701,383.

Barnes, Ralph. Method for moulding helmet shells and the like. 3,701,821, Cl. 264-318.000.

Barnscheidt, Wolfgang, to Feldmuhle Aktiengesellschaft. Coating apparatus for sheet material. 3,701,335, Cl. 118-104.000.

Barr, Charles R.; Williams, John; and Whitmore, Keith E., to Eastman Kodak Company. Certain mercaptan forming couplers. 3,701,783, Cl. 260-308.00d.

Barrett, Arthur Lee. Direct contact food freezing. 3,701,263, Cl. 62-63.000.

Barron, Roger L.; and Cleveland, Dixon, to Adaptronics, Inc. Variable-structure automatic control system. 3,701,889, Cl. 235-150.100.

Bartholini, Giuseppe, to Hoffmann-La Roche, Inc. Treatment of Parkinson's disease. 3,701,829, Cl. 424-319.000.

Bartolotta, Charles S.: *See—*
Bergin, Michael T.; and Bartolotta, Charles S., 3,701,602.

Bateman, Coates F., to Veeder Industries, Inc. Gasoline station accounting system. 3,701,994, Cl. 346-43.000.

Battermann, George Monte Gilbert: *See—*
Fearon, Joseph G.; and Battermann, George Monte Gilbert, 3,701,320.

Bauer, Karl; Martens, Gerhard; and Schiminski, Herbert, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Inductively heated godet. 3,701,873, Cl. 219-10.610.

Baychem Corporation: *See—*
McKean, Jack H., 3,701,355.

Beal, Edward W.: *See—*
Lambert, Robert E.; Beal, Edward W.; and Bacewicz, Anthony J., 3,701,969.

Beaton, Joseph R. Transportable floating birling device with ladder mount. 3,701,527, Cl. 272-1.00b.

Bechtold, Charles L.: *See—*
Austin, Amory Earl; and Bechtold, Charles L., 3,701,736.

Becker, Dietrich: *See—*
Thiele, Heinz; Becker, Dietrich; Hochstein, Roland; Rockstroh, Horst; and Lieckfeldt, Hans, 3,701,309.

Beckman Instruments, Inc.: *See—*
Deuringer, Rudolf; Ray, Robert A.; and Sternberg, James C., 3,701,716.

Behn, Joseph W., to Bell Telephone Laboratories, Incorporated. Testing circuit. 3,701,848, Cl. 179-1.500.

Belkin, Joseph W. Proctoscope. 3,701,347, Cl. 06/19/72.

Bell & Howell Company: *See—*
Thomsen, Jack W.; Nupnau, Arthur E.; Kim, Raymond W. H.; and Cherniavskyj, Jaroslav, 3,701,595.

Bell, Lee J. Rear view mirror attachment for vehicles. 3,701,507, Cl. 248-467.000.

Bell Telephone Laboratories, Incorporated: *See—*
Amelio, Gilbert Frank; and Smith, George Elwood, 3,701,914.
Anderson, Harold Peter; and Fenton, Francis Michael, 3,701,854.
Armstrong, Douglas Byron, 3,702,011.
Behn, Joseph W., 3,701,848.
Combs, Donald Earle, 3,701,937.
Eisenlohr, Dieter Moritz; and Romero, Roderic, 3,701,863.
Glinski, Vincent J., 3,701,198.
Groth, George Stephen, 3,702,008.
Reynolds, Howard Lloyd, 3,701,855.
Runge, Peter Klaus, 3,701,584.
Schmidt, Robert Benjamin; Smith, George Wallace, Jr.; and Walford, Robert Bernard, 3,702,010.
Seidel, Harold, 3,701,950.
Shively, Richard Robert, 3,701,976.
Stapleton, Richard Joseph, 3,701,849.
Starrett, William Roswell, 3,701,851.
Waaben, Sigurd G., 3,701,907.

Belzberg, Samuel I., to Unican Security Systems, Ltd. Self-holding tube end closures. 3,701,450, Cl. 220-24.000.

Ben-Zeev, Dan: *See—*
Suhami, Albert; Sabbah, Benjamin; Inbar, Dan; Yarom, Artzi; and Ben-Zeev, Dan, 3,701,901.

Bendix Corporation: *See—*
Burnett, Richard T.; and Colpaert, James J., 3,701,400.

Bendix Corporation, The: *See—*
Gaiser, Robert F., 3,701,257.
Lewis, Richard L.; and Goscenski, Edward J., Jr., 3,701,305.
Lewis, Richard L.; Hickner, George B.; and Harokopus, William P., 3,701,568.
McDaniel, George H., 3,701,888.
Shutt, Paul B.; and Barnes, Charles M., 3,701,567.
Teitelbaum, Bernard R., 3,701,334.

Bennett, Ian Cameron; and Du Chaffaut, Jean Amaudric, to British Petroleum Company Limited, The. Solvent removal from microorganisms. 3,701,713, Cl. 195-28.00r.

Berg, Rudolph G., to Pfizer Inc. Preparation of citraconic and itaconic acids. 3,701,805, Cl. 260-531.00r.

Berger, Abe: *See—*
Holub, Fred F.; Berger, Abe; Hardman, Bruce B.; and Urkevich, Michael P., 3,701,795.

Berges, David A.; Dunn, George L.; and Hoover, John R. E., to Smith Kline & French Laboratories. Esters of man deloylaminocephalosporanic acids. 3,701,775, Cl. 260-243.00c.

Bergey, John M.; Blouch, Eric L.; and Walton, Richard S., to Hamilton Watch Company. Solid state timepiece with liquid crystal display. 3,701,249, Cl. 58-50.00r.

Bergin, Michael T.; and Bartolotta, Charles S., to Grumman Aerospace Corporation. Multi-axis optical alignment system including a spatial filter. 3,701,602, Cl. 356-152.000.

Berglund, Per Henrik Sixten; Fanto-Kurtos, Peter Robert; and Mattson, Nils Albert Uno, to Continental Linoleum-Union-Betriebs AG. Apparatus for producing fibres of thermoplastic material. 3,701,621, Cl. 425-115.000.

Berkeley, Arnold D.; Bold, Eugene W.; Jefferson, Donald E.; and Zeller, Gerard A., to Computer Retrieval Systems, Inc. Data processing system. 3,701,972, Cl. 340-172.500.

Berkman, Richard M.; and Schoefer, Peter B., to Science Spectrum Inc. Sample scattering cell for a photometer. 3,701,620, Cl. 356-246.000.

Beroff, Howard; and Richmond, Ernest L., to Ethicon, Inc. Apparatus for electropolishing of drilled surgical needles. 3,701,725, Cl. 204-297.00m.

Berry, James W.: *See—*
Ashby, Carl T.; Berry, James W.; and Deutschman, Archie J., Jr., 3,701,648.

Berry Metal Company: *See—*
Herff, Louis M., 3,701,518.

Bessett, Clifford H.: *See—*
Boyd, James W.; and Bessett, Clifford H., 3,701,447.

Best, Eric, to Hyster Company, mesne. Means for controlling pallet truck foot pedal position. 3,701,211, Cl. 280-43.120.

Bhatia, Satya Pal: *See—*
Prahacs, Steven; and Bhatia, Satya Pal, 3,701,824.

Bianchini, Giacomo, to DHJ Industries, Inc. Method and means for heat bonding. 3,701,709, Cl. 156-583.000.

Biegler, Hanns: *See—*
Kallrath, Gottfried; Knorre, Helmut; Meyer-Simon, Eugen; and Biegler, Hanns, 3,701,675.

Biel, John H.: *See—*
Hopps, Harvey B.; Jackman, Dennis; and Biel, John H., 3,701,786.

Billon, Gerard: *See—*
Henry, Jean Claude; and Billon, Gerard, 3,701,867.

Binder, Wolfgang; Kalkreuth, Hasso; Glaser, Josef; and Fahrenkrug, Gunter, to VEB Kombinat Mess- und Regelungstechnik Dessau Werk Massindustrie Werdau. Apparatus for punching a data carrier such as a tape. 3,701,470, Cl. 234-99.000.

Bionetics, Inc.: *See—*
Patrick, Charles T., Jr., 3,701,346.

Blackwell Electronics Ind., Co., Ltd.: *See—*
Nozawa, Shunichi; Kuroi, Hisashi; Hatada, Masamichi; and Fukuyama, Shunsaku, 3,701,925.

Blair, Walter A.: *See—*
Fortini, Jack G.; Blair, Walter A.; and Grodsky, Gerold M., 3,701,768.

Blair/Johnson, Inc.: *See—*
Fortini, Jack G.; Blair, Walter A.; and Grodsky, Gerold M., 3,701,768.

Blengsli, Helmer L., to Tekology Corporation. Masonry materials and method of making the same. 3,701,671, Cl. 106-98.000.

Blood, Alden E.: *See—*
Snapp, Thomas Carter, Jr.; Blood, Alden E.; and Hagemeyer, Hugh John, Jr., 3,701,798.

Blore, James H., to Phillips Fibers Corporation. Panty-hose. 3,701,164, Cl. 2-224.00r.

Blouch, Eric L.: *See—*
Bergey, John M.; Blouch, Eric L.; and Walton, Richard S., 3,701,249.

Bobrick Aero Missile Products: *See—*
Cowan, Arnold A., 3,701,552.

Boggs, Weldon C., to Food Research & Equipment Company. Deep fat fryer unit with solenoid valves and automatic controls. 3,701,313, Cl. 99-330.000.

Bogsten, Anders Richard. Drill, particularly a so-called deep hole drill or gun boring drill. 3,701,606, Cl. 408-59.000.

Bohlmeijer, Nicolaas: *See—*
Schouten, Gerrit Hilbertus; Bohlmeijer, Nicolaas; Van Der Steeg, Hendrik; and Van der Maarel, Marinus Cornelis, 3,701,981.

Bold, Eugene W.: *See—*
Berkeley, Arnold D.; Bold, Eugene W.; Jefferson, Donald E.; and Zeller, Gerard A., 3,701,972.

Boliden Aktiebolag: *See—*
Nilsson, Bruno Yngve, 3,701,940.

Bond, James M. Apparatus facilitating care of a bedfast patient. 3,701,170, Cl. 4-174.000.

Boosen, Karl-Josef, to Lonza Ltd. Method for the production of acetoacetic acids. 3,701,803, Cl. 260-526.00r.

Boosirom, Roy E.; Mandell, Arman; and Malter, Lewis. Combination teaching aid and modular instrumental analysis system and components therefor. 3;701,603, Cl. 356-246.000.

Borelli, Ronald F.; and Garand, Donald J., to Honeywell, Inc. Printing apparatus. 3,701,337, Cl. 118-637.000.

Borg-Warner Corporation: *See—*
Newton, Alwin B., 3,701,264.

Born, Dieter; Stech, Peter; and Huebner, Werner, to Klein, Schanzlin & Becker A.G. Contact-free hydrostatic seal. 3,701,535, Cl. 277-3.

Bosche, Walwin J., Jr., to Wicks Organ Company, The. Swell shade control. 3,701,833, Cl. 84-346.000.

Bosworth, Nathaniel L. Abdominal wall punch. 3,701,352, Cl. 128-305.000.

Bovarnick, Bennett; Eberts, Robert E.; and Nadkarni, Ravindra, to Little, Arthur D., Inc. Method for forming mixed oxide heterogenous catalysts. 3,701,739, Cl. 252-454.000.

Bowe, Bohler & Weber KG Maschinenfabrik: *See—*
Sieber, Johannes Helmut, 3,701,625.

Bower, Robert G.: *See—*
Shneider, Harold M.; and Bower, Robert G., 3,701,524.

Bowers, Jeffrey L. Elastic projectile and tree-like target. 3,701,531, Cl. 273-95.00r.

Bowers, Regis D., to Chausse Manufacturing Co., Inc. Steam cleaner. 3,701,343, Cl. 126-271.20r.

Boyce, David C.: *See—*
Weinrich, Bernard W.; and Boyce, David C., 3,701,830.

Boyd, James W.; and Bessett, Clifford H., to Packaging Corporation of America. Tray construction. 3,701,447, Cl. 217-26.500.

Bradley, William H.: *See—*
McConnell, William M.; Bradley, William H.; Chappel, Howard E.; Whitfield, George P.; and Carey, Raymond L., 3,701,336.

Brady, Harold P., Jr.: *See—*
Richardson, Dean E.; Peterson, Adolph A., 111; and Brady, Harold P., Jr., 3,701,742.

Brand, Boris Peter, to Ilford Limited. Color developing with a 4-sulfonaphthamide base. 3,701,661, Cl. 96-55.000.

Brand, Derek: *See—*
Imatt, Alex; and Brand, Derek, 3,701,477.

Branson Instruments, Incorporated: *See—*
Bantz, Walter J.; and Pittaro, Richard J., 3,701,941.

Braun, Richard E.; and Hopkins, Lionel G., to Magnetic Head Corporation. Unipartite read/write and/or center section housing for dual gap magnetic head assemblies employing unitary intertrack shielding extensions. 3,701,859, Cl. 179-100.20c.

Breed, Arthur R., to Lamson & Sessions Co., The. Lock bolt and method of making the same. 3,701,372, Cl. 151-22.000.

Breuner, Gerald L. Rotor hub and blade attachments. 3,701,612, Cl. 416-141.000.

Brieke, Hans-Gunter: *See—*
Staarmann, Herbert; Brieke, Hans-Gunter; and Gerdes, Dirk, 3,701,635.

Brinker, Norman E.: *See—*
Fassler, Michael H.; and Brinker, Norman E., 3,701,379.

Briscoe, James A.: *See—*
Zeffer, Arthur A.; and Briscoe, James A., 3,701,500.

British Insulated Callender's Cables Limited: *See—*
Wills, Graham Boyce; and Walker, Frank Stanley, 3,701,683.

British Petroleum Company Limited, The: *See—*
Bennett, Ian Cameron; and Du Chaffaut, Jean Amaudric, 3,701,713.

Broding, Robert A., to Seismograph Service Corporation. Air cushion seismic vibrator. 3,701,968, Cl. 340-17.000.

Brooks, Doyle K. Book mark and page holding device. 3,701,332, Cl. 116-119.000.

Broussard, Edwin C. Turn around pan shield for automatic pin setters. 3,701,530, Cl. 273-43.00r.

Brown & Root, Inc.: *See—*
Nolan, Clyde E., Jr., 3,701,261.

Brown, Barry M.; and Ray, Elbert L., to Eastman Kodak Company. Reverse osmosis apparatus and method for making same. 3,701,431, Cl. 210-321.000.

Brown, Carl A.; and Thomas, Jerald F., to Parker-Hannifin Corporation. Fluid filtering device. 3,701,424, Cl. 210-90.000.

Brown, Gaylor W.; Brushaber, Larry; and Brown, Melvin L., to Koehring Company. Apparatus for friction welding synthetic plastic container parts and the like. 3,701,708, Cl. 156-582.000.

Brown, Melvin L.: *See—*
Brown, Gaylor W.; Brushaber, Larry; and Brown, Melvin L., 3,701,708.

Brown, William Brownloe, to Western Electric Company, Incorporated. Methods of and apparatus for continuously reeling strand material. 3,701,491, Cl. 242-25.00a.

Brunialti, Bruno; and Zaffignani, Giovanni, to Olivetti, Ing. C., & C., S.p.A. Data transmission by teleprinter. 3,701,841, Cl. 178-4.10b.

Brushaber, Larry: *See—*
Brown, Gaylor W.; Brushaber, Larry; and Brown, Melvin L., 3,701,708.

Buchsieb, Richard H.: *See—*
Kimble, Floyd E.; and Buchsieb, Richard H., 3,701,485.

Buffa, Antonio: *See—*
Tarducci, Tullio; Gatti, Alvaro; and Buffa, Antonio, 3,701,541.

Bunn, Stuart E.: *See—*
Owsley, Herbert B.; and Bunn, Stuart E., 3,701,342.

Bunn, Stuart E.; and Owsley, Herbert B. Valve assembly and valve member therefor. 3,701,361, Cl. 137-543.230.

Bunnell, John A.: *See—*
Goldsworthy, William D.; and Bunnell, John A., 3,701,489.

Burdeska, Kurt: *See—*
Pugin, Andre; Burdeska, Kurt; and Model, Ernst, 3,701,791.

Burnett, Richard T.; and Colpaert, James J., to Bendix Corporation. Parking actuator for disc brake. 3,701,400, Cl. 188-72.600.

Burns, Joseph Richard, to RCA Corporation. Memory subsystem array. 3,701,984, Cl. 340-173.00r.

Burroughs Corporation: *See—*
Glaser, David, 3,701,916.
Glaser, David, 3,701,924.
Kupsky, George A., 3,701,917.

Sanner, Gary L.; and Hebeler, Charles B., 3,701,971.

Buschow, Kurt Heinz Jurgen; and Westendorp, Frans Frederik, to U.S. Philips Corporation. Method of manufacturing a permanent magnet. 3,701,695, Cl. 148-103.000.

Buslik, Walter S.; and Chou, Albert S., to International Business Machines Corporation. Suspension system for holding a slider. 3,701,610, Cl. 248-204.000.

C & M Manufacturing Company, Inc.: *See—*
Smith, Raymond Leonard, Jr., 3,701,446.

Cagnon, Eugene C., to Ford Motor Company. Structure for closing a motor housing and for supporting a brush elements making contact with the armature thereof. 3,701,913, Cl. 310-247.000.

Caldwell, Albert L.: *See—*
Routson, Willis G.; and Caldwell, Albert L., 3,701,384.

Calhoon, Charles D., Sr.; Goetz, Louis P.; and Smith, Harry B., to United States of America, Navy, mesne. Centroid seeking method for determining azimuth and elevation angle simultaneously. 3,701,989, Cl. 343-16.00r.

California Institute of Technology: *See—*
Lovelock, James E., 3,701,632.

California R&D Center: *See—*
Smith, Jay, III; Schmidt, Gerald W.; and Jones, Lawrence T., 3,701,216.

Campbell, Bruce D., to Coto-Coil Co., Inc. Reed relay having low thermal EMF. 3,701,960, Cl. 335-154.000.

Campbell, Erwin A.: *See—*
Woolslayer, Homer J.; Woolslayer, Joseph R.; Jenkins, Cecil; and Campbell, Erwin A., 3,701,435.

Campo, Charles. Admission pass recording and cancelling machine. 3,701,887, Cl. 235-91.00r.

Canon Kabushiki Kaisha: *See—*
Iwawaki, Yasutaka; Yoshikawa, Minoru; and Usui, Yukio, 3,701,860.

Canrad Precision Industries, Inc.: *See—*
Thuler, Oscar, 3,701,900.

Carey, Raymond L.: *See—*
McConnell, William M.; Bradley, William H.; Chappel, Howard E.; Whitfield, George P.; and Carey, Raymond L., 3,701,336.

Carl, Christopher: *See—*
United States of America, National Aeronautics and Space Administration, 3,701,894.

Carle, Ross C., to ACF Industries Inc. Fluid dampened railway bolster spring. 3,701,322, Cl. 105-197.00b.

Carleton, Peter S.; Farrissey, William J., Jr.; and Rose, James S., to Upjohn Company, The. Catalytic preparation of polyimides from polyisocyanates. 3,701,756, Cl. 260-78.0tf.

Carling Electric, Inc.: *See—*
Sorenson, Richard W., 3,701,870.

Carlo Tassara S.p.A. Stabilimenti Elettrosiderurgici: *See—*
Manara, Angelo Teodoro, 3,701,511.

Carlson, Elmer Victor; and Killion, Mead Clifford, to Industrial Research Products, Inc. Acoustic transducer having diaphragam pivoted in its surroud. 3,701,865, Cl. 179-181.00r.

Carney, John L., Jr.: *See—*
Dugge, Richard H.; and Carney, John L., Jr., 3,701,460.

Carpenter, David Harry: *See—*
Stark, John, Jr.; and Carpenter, David Harry, 3,701,845.

Carr, George W., to Pullman Incorporated. Container chassis attachment arrangement. 3,701,562, Cl. 296-35.

Carrier Corporation: *See—*
Leonard, Louis H., Jr., 3,701,265.

Carter, Shirley J. Fuel feeding apparatus. 3,701,513, Cl. 261-18.00a.

Carter, William C.; and Schneider, Peter R., to International Business Machines Corporation. Parity checked shift register counters. 3,701,892, Cl. 235-153.000.

Cary Products, Inc.: *See—*
Mc Larty, Shirley, 3,701,311.

Cassell, Perry E. Torque overload release coupling. 3,701,404, Cl. 192-56.00r.

Centofante, James Vincent. Adjustable magnetic door stop. 3,701,557, Cl. 29-251.500.

Chadwick, Philip, to General Electric Company. Minimum valve voltage method and control apparatus for HVDC power converters. 3,701,938, Cl. 321-11.000.

Chainbelt, Rex, Inc.: *See—*
Kormanik, Richard A., 3,701,727.

Challis, Kenneth John: *See—*
Lee, Edward William; Tatchell, Keith Reid; Challis, Kenneth John; and Cockerton, Kenneth Archibald, 3,701,680.

Chapman, Robert R., to Sortex Company of North America, Inc. Grading machine. 3,701,418, Cl. 209-99.000.

Chappel, Howard E.: *See—*
McConnell, William M.; Bradley, William H.; Chappel, Howard E.; Whitfield, George P.; and Carey, Raymond L., 3,701,336.

Chausse Manufacturing Co., Inc.: *See—*
Bowers, Regis D., 3,701,343.

Chebuhar, Charles J.: *See—*
Windstrup, Robert F.; and Chebuhar, Charles J., 3,701,440.

Chelnokov, Ivan Ivanovich; Garbuzov, Vladimir Mikhailovich; Koshelev, A. Vladimir; Levit, Georgy Mikhailovich; Maltsev, Albert Alexandrovich; and Myachev, Vladimir Fedorovich, to Leningradsky Institut Inzhenerov Zheleznoforpzhnogo Transporta Imeni Akademik N. V. Obraztsova and Kalininsky Vagonostroitelny Zavod. Vibration damper for vehicles. 3,701,402, Cl. 188-314.000.

Chemical Construction Corporation: *See—*
Negra, John S.; and Warshaw, Abe, 3,701,822.

Chemiefaser Lenzing Akhengesellschaft Lenzing: *See—*
Sogner, Dominik, 3,701,281.

Chemische Werke Huls, A.G.: *See—*
Magosch, Karl-Heinz; Rombusch, Konrad; and Eichers, Ursula, 3,701,765.

Cherniavskyj, Jaroslav: *See—*
Thomsen, Jack W.; Nupnau, Arthur E.; Kim, Raymond W. H.; and Cherniavskyj, Jaroslav, 3,701,595.

Chew, Harvey L.: *See—*
Zimmer, William F., Jr.; and Chew, Harvey L., 3,701,703.

Chi, Tzu-Chiang, 30% to Andress, William I. Process for folding sheet material and packaged therefor. 3,701,522, Cl. 270-39.000.

Chieana Modrany narodni podnik: *See—*
Voparil, Rastislav, 3,701,899.

Chisholm, Raymond S., to PPG Industries, Inc. Method of tempering glass in a liquid. 3,701,266, Cl. 65-116.000.

Chlouper, Frank J.: *See—*
Lease, Charles A.; Patinkin, Seymour H.; and Chlouper, Frank J., 3,701,640.

Chou, Albert S.: *See—*
Buslik, Walter S.; and Chou, Albert S., 3,701,610.

Chupp, John P., to Monsanto Company. N-(1-Cycloalken-1yl) ureas and thioureas. 3,701,807, Cl. 260-553.00a.

Ciba-Geigy AG: *See—*
Piller, Bernhard; and Seitz, Karl, 3,701,664.
Pugin, Andre; Burdeska, Kurt; and Model, Ernst, 3,701,791.

Cincinnati Milacron Chemicals Inc.: *See—*
Stapfer, Christian H., 3,701,781.

Cities Service Oil Company: *See—*
Rakow, Marvin S.; and Konig, Robert J., 3,701,641.

Clark, James Charles: *See—*
Witsey, Noel John Charles; and Clark, James Charles, 3,701,875.

Clark, Robert N., to Owens-Illinois, Inc. Process for applying phosphor particles to a dielectric layer of a gaseous discharge device. 3,701,658, Cl. 96-3.10.

Clark, Wallace; Jones, Reginald A.; and Teeters, James L. Drive mechanism for wheeled vehicle. 3,701,543, Cl. 280-234.000.

Cleff, Herbert: *See—*
Jentsch, Dietrich; and Cleff, Herbert, 3,701,180.

Clement, Rene; Manfredi, Pierre; and Roulliay, Roger. Flexible welding rod having organically bound core and protective sheath. 3,701,444, Cl. 214-146.000.

Cleveland, Dixon: *See—*
Barron, Roger L.; and Cleveland, Dixon, 3,701,889.

Coats, John H.; Herr, Milton E.; and Herr, Ross R., to Upjohn Company, The. Antibiotic sphaeropsidin. 3,701,790, Cl. 260-348.00c.

Cochran, Larry Allen: *See—*
Kirkwood, Loren Robert; Cochran, Larry Allen; and Altmanshofer, Robert Dale, 3,701,842.

Cochran, Larry Allen, to RCA Corporation. Color compensating network for an integrated circuit television receiver. 3,701,844, Cl. 179-5.4he.

Cockerton, Kenneth Archibald: *See—*
Lee, Edward William; Tatchell, Keith Reid; Challis, Kenneth John; and Cockerton, Kenneth Archibald, 3,701,680.

Cohen, Mitchell S.: *See—*
Smith, Donald O.; Harte, Kenneth J.; and Cohen, Mitchell S., 3,701,979.

Cohn, Nathan, to Leeds & Northrup Company. Methods of and systems for coordinated system-wide energy balancing in the control of bulk power transfer. 3,701,891, Cl. 235-151.210.

Cole, Ernest A.; Mayse, Weldon D.; and Watson, Frederick D., to Petrolite Corporation. Electric treatment of dispersions. 3,701,723, Cl. 204-188.000.

Cole, Jack; and McIntosh, John Robert. Glass refinishing apparatus. 3,701,223, Cl. 51-241.00s.

Colgate-Palmolive Company: *See—*
Austin, Amory Earl; and Bechtold, Charles L., 3,701,736.
Finck, Patricia A., 3,701,735.

Collie, Arthur A., to Kenwood Manufacturing (Woking) Limited. Circuit for food mixer. 3,701,935, Cl. 318-325.000.

Collins Radio Company: *See—*
Martin, Kenneth G.; and Seuferer, Paul A., 3,701,936.

Colorado Instruments, Inc.: *See—*
Webb, Richard C.; and Heath, Robert T., 3,701,885.

Colorado Manufacturing Corporation: *See—*
DeMeyer, Roy W., 3,701,284.

Colpaert, James J.: *See—*
Burnett, Richard T.; and Colpaert, James J., 3,701,400.

Colt Industries Operating Corporation, mesne: *See—*
Lewis, Karl R., 3,701,213.

Columbia Broadcasting System, Inc.: *See—*
Rubio, Alfred M., 3,701,834.

Combs, Donald Earle, to Bell Telephone Laboratories, Incorporated. Pulse-width modulated DC to DC converter with zero percent duty cycle capability. 3,701,937, Cl. 321-2.000.

Combs, Robert L.: *See—*
Meyer, Max F., Jr.; Combs, Robert L.; and Wooten, Willis C., Jr., 3,701,741.

Commonwealth of Puerto Rico: *See—*
Ramos-Rodriguez, Emiliano, 3,701,789.

Compa, Russel Edward; and Liebowitz, Marvin. Distributor for liquid textile conditioners. 3,701,202, Cl. 34-72.000.

Compagnie Generale d'Electricite: *See—*

Paris, Jean Denel; Maldy, Wissous; and Santa-Maria, Enrique, 3,701,906.
Computer Retrieval Systems, Inc.: *See—*
Berkeley, Arnold D.; Bold, Eugene W.; Jefferson, Donald E.; and Zeller, Gerard A., 3,701,972.
Computer Test Corporation: *See—*
Holmes, Walter V.; and Renz, John F., 3,701,909.
Concrete Pipe Machinery Company: *See—*
Crawsord, Gerald R.; and Wenther, Joseph F., 3,701,617.
Congleton, David B.; Roberts, Donald L.; and Evans, Pat E., to National Cash Register Company, The. Computer output laser microform recording system. 3,701,999, Cl. 346-76.00l.
Connecticut International Corporation: *See—*
Lambert, Robert E.; Beal, Edward W.; and Bacewicz, Anthony J., 3,701,969.
Connell, Joseph A.; and Baranyi, Anthony J., to Systems Capital Corporation. Means for the underground storage of liquified gas. 3,701,262, Cl. 62-45.000.
Connick, William J., Jr.: *See—*
Ellzey, Samuel E., Jr.; Connick, William J., Jr.; Reeves, Wilson A.; and Drake, George L., Jr., 3,701,626.
Conrad, Erich Henry. Schiffli-embroidered panel and kit containing the same. 3,701,207, Cl. 35-26.000.
Consiglio Nazionale Delle Ricerche: *See—*
De Rossi, Mario, 3,701,684.
Container Corporation of America: *See—*
Standley, Wendell E., 3,701,231.
Continental Can Company, Inc.: *See—*
Windstrup, Robert F.; and Chebuhar, Charles J., 3,701,440.
Woodrow, James R.; and Lynski, Robert R., 3,701,466.
Continental Carbon Company: *See—*
Dahmen, Karel R., 3,701,827.
Continental Linoleum-Union-Betriebs AG: *See—*
Berglund, Per Henrik Sixten; Fanto-Kurtos, Peter Robert; and Mattson, Nils Albert Uno, 3,701,621.
Continental Oil Company: *See—*
Baldwin, David E., Jr., 3,702,009.
Cook, Newell C., to General Electric Company. Soft-solderable molybdenum and tungsten surface containing diffused tin. 3,701,639, Cl. 29-195.000.
Cooper Industries, Inc.: *See—*
Fulcher, Junius H., 3,701,226.
COPAL: *See—*
Sato, Takayoshi, 3,701,910.
Coto-Coil Co., Inc.: *See—*
Campbell, Bruce D., 3,701,960.
Couvillon, Lucien A., Jr.: *See—*
United States of America, National Aeronautics and Space Administration, 3,701,894.
Coviello, Joseph: *See—*
Procter, James F.; Mebus, Henry R.; De Young, Robert J.; and Coviello, Joseph, 3,701,176.
Cowan, Arnold A., to Bobrick Aero Missile Products. Composite construction for nipple used in ground starting for jet engines. 3,701,552, Cl. 285-158.000.
Cox, Arthur T. Guides for sliding doors. 3,701,179, Cl. 16-90.000.
Cox, Edwin W., to Cox, W. T., Company. Convertible raid-highway vehicle. 3,701,323, Cl. 105-215.00c.
Cox, W. T., Company: *See—*
Cox, Edwin W., 3,701,323.
Coyne et Bellier, Bureau d'Ingenieurs Conseils, mesne: *See—*
Puyo, Andre; and Habib, Pierre Andre, 3,701,554.
Crawsord, Gerald R.; and Wenther, Joseph F., to Concrete Pipe Machinery Company. Lock assembly for connecting a vibrating core of a concrete pipe making machine. 3,701,617, Cl. 425-186.000.
Crivello, James V., to General Electric Company. Process for making poly(arylenevinylenes). 3,701,740, Cl. 260-2.00h.
Cronert, Dieter: *See—*
Rother, Wolfgang; Mordig, Eberhard; Wenzel, Erwin; Cronert, Dieter; Sand, Karl; Kasbohm, Joachim; Henicke, Heinz; Landmann, Helmut; and Stocker, Winfried, 3,701,881.
Cronin, Michael J., to Lockheed Aircraft Corporation. Flat cable electrical wiring system. 3,701,964, Cl. 339-17.00f.
Crosby, Robert C.; and Holley, John D., to Marmon Group, Inc., The. Railroad tie shredder. 3,701,483, Cl. 241-32.000.
Cross, Walter Peter. Battery casting of concrete panels. 3,701,508, Cl. 249-129.000.
Crown Zellerbach Corporation: *See—*
Shilling, Wilbur L., 3,701,814.
Crum, James N., to Harris-Intertype Corporation. Circumferential and lateral web registration control system. 3,701,464, Cl. 226-3.000.
Culligan International Company: *See—*
Morrison, Edwin A., 3,701,360.
Curtiss-Wright Corporation: *See—*
Palma, Michael A.; and Minarick, Joseph W., 3,701,401.
Watts, Hargus, 3,701,381.
Cutler-Hammer Inc.: *See—*
Turkish, Disney, 3,701,949.
Dahmen, Karel R., to Continental Carbon Company. Process and apparatus for the production of large particle-size, low structure carbon black. 3,701,827, Cl. 423-456.000.
Dainichi Nippon Cables Ltd.: *See—*
Fujita, Hideo; Ishitobi, Masami; Suga, Hiroyoshi; Ishiwari, Keishiro; Yotsui, Yoshikazu; Yamashita, Tadao; Edamitsu, Masayuki; and Moriwaki, Shokichi, 3,701,720.
Dainippon Pharmaceutical Co., Ltd.: *See—*
Minami, Shinsaku; Matsumoto, Jun-Ichi; Shimizu, Masanao; and Takase, Yoshiyuki, 3,701,773.
Dalebout, Melvin w. Ski boot. 3,701,208, Cl. 36-2.5al.
Danfoss A/S: *See—*
Petersen, Tom Kastrup; and Henriksen, Neils Juul, 3,701,939.
Daniel Industries, Inc.: *See—*
Stroman, Larry J., 3,701,280.
Daniels, David A.; and Wendler, Kenneth T., to Grace, W. R., & Co. Extreme pressure properties of synthetic lubricants. 3,701,730, Cl. 252-49.900.
Dart Industries, Inc.: *See—*
Schramm, Charles H.; Schrage, Albert; and Readio, Philip D., 3,701,751.
Davies, John S. Fire detection system and unit. 3,701,985, Cl. 340-228.000.
Davis, Ariel Rual. Framework for supporting air cooled electrical and electronic equipment. 3,701,928, Cl. 317-99.000.
Davis, Roderic A., II, to International Business Machines Corporation. Table driven program. 3,702,007, Cl. 444-1.000.
Davis, Stuart C., to Photo Corporation of America. Photographic camera exposure controlling means. 3,701,308, Cl. 95-11.50r.
Davis, Ward B., to Stesiliver Control Royalties. Disposable colorimetric ph indicator and sampling device for swimming pool water and thelike. 3,701,633, Cl. 23-253.0tp.
Dawe's Laboratories, Inc.: *See—*
Lakshminarayanan, Krishnaiyer, 3,701,715.
De Rooij, Abraham H.; and Kwanten, Ferdinand J. G., to Stamicarbon N.V. Cyclic process for the preparation of an oxime from a hydroxylammonium salt solution. 3,701,809, Cl. 260-566.00a.
De Rossi, Mario, to Consiglio Nazionale Delle Ricerche. Zinc-zinc halide storage battery. 3,701,684, Cl. 136-30.000.
De Vries, Douwe: *See—*
Koomey, Paul C.; De Vries, Douwe; and Gilmore, Samuel E., 3,701,549.
De Vries, Robert C.; and Fleischer, James F., to General Electric Company. Cubic boron nitride preparation from lithium-boron-nitrogen mixture. 3,701,826, Cl. 423-290.0on.
De Young, Robert J.: *See—*
Procter, James F.; Mebus, Henry R.; De Young, Robert J.; and Coviello, Joseph, 3,701,176.
Dede, Joseph B., Jr.: *See—*
Horowitz, Frederic; and Dede, Joseph B., Jr., 3,701,743.
Deere & Company: *See—*
Hennen, John Joseph, 3,701,239.
Lemons, David Forrest; Marquart, Gordon Le Roy; and Herscovici, Saul, 3,701,393.
Patterson, Roger Lee; and Ventresca, Mario, 3,701,385.
Priest, Melvin E., 3,701,218.
Delaware SDS, Inc., mesne: *See—*
Mendelson, Myron J.; and England, Alfred W., 3,701,977.
Delbouille, Andre, to Solvay & Cie. Process for the polymerization of α-olefins. 3,701,766, Cl. 260-93.700.
Delligatti, Patrick. Hour and/or minute code marker. 3,702,000, Cl. 346-92.000.
DeMeyer, Roy W., to Colorado Manufacturing Corporation. Pressure gauge. 3,701,284, Cl. 73-41.00c.
Dermody, William J.; and Oltman, John E., to ESB Incorporated. Battery having sealant impregnated into separator. 3,701,690, Cl. 136-175.000.
Dervy, Aram J., to McDonnell Douglas Corporation. Method of fabricating a rocket nozzle liner. 3,701,704, Cl. 156-297.000.
Detroit Bullet Trap Corporation: *See—*
Nikoden, Joseph, 3,701,532.
Deuringer, Rudolf; Ray, Robert A.; and Sternberg, James C., to Beckman Instruments, Inc. Liquid analysis apparatus. 3,701,716, Cl. 195-127.
Deutsche Gold- und Silber-Scheideanstalt vormal Roessler: *See—*
Bader, Erich; Kannenberg, Karl G.; and Ricke, Hans-Benno, 3,701,676.
Kallrath, Gottfried; Knorre, Helmut; Meyer-Simon, Eugen; and Biegler, Hanns, 3,701,675.
Kuhner, Gerhard; Sauer, Heinrich; Jager, Gerhard; and Dusing, Gerhard, 3,701,480.
Deutschman, Archie J., Jr.: *See—*
Ashby, Carl T.; Berry, James W.; and Deutschman, Archie J., Jr., 3,701,648.
DHJ Industries, Inc.: *See—*
Bianchini, Giacomo, 3,701,709.
Diebold, Incorporated: *See—*
Anders, Walter G.; and Obermiller, Herbert C., 3,701,497.
Ekama, Pieter J., 3,701,496.
Dietz, Ernst Hermann, to Prontor Werk Gauthier, Alfred, GmbH. Photographic shutter with electronic time setting device. 3,701,310, Cl. 95-53.00e.
Dismon, Peter; and Jansen, Heinz, to Glanzstoff AG. Apparatus for applying a wire coil to a fine wire strand. 3,701,244, Cl. 57-18.000.
Dixson, Richard E.; and Merrill, Linus R. Device for demounting tires. 3,701,375, Cl. 157-1.330.
Docent Corporation: *See—*
Wolf, Stanley, 3,701,205.
Donnelly, James F.; Gee, Wendell P.; and Phipps, Nelson S., to Jamesbury Corporation. Handle for positioning an element. 3,701,286, Cl. 74-142.000.

Donninger, Cyril; Schofield, John A.; and Hawes, John E., to Shell Oil Company. Pyridine carbamates. 3,701,779, Cl. 260-294.80g.
Donovan, Howard Gleason, to Johns-Manville Corporation. Apparatus and process for suspending solids. 3,701,484, Cl. 241-5.000.
Doo, Ven Y.; Regh, Joseph; and Seto, David K., to International Business Machines Corporation. Photolithographic masks of semiconductor material. 3,701,659, Cl. 96-38.300.
Dorken & Mankel KG: *See*—
Jentsch, Dietrich; and Cleff, Herbert, 3,701,180.
Dow Chemical Company, The: *See*—
Routson, Willis G.; and Caldwell, Albert L., 3,701,384.
Downey, Thomas A., to Zurn Engineers. Vehicle mounted earth separating and conveying system. 3,701,422, Cl. 209-241.000.
Drake, George L., Jr.: *See*—
Ellzey, Samuel E., Jr.; Connick, William J., Jr.; Reeves, Wilson A.; and Drake, George L., Jr., 3,701,626.
Dresser Industries, Inc.: *See*—
Feucht, Jacob E., 3,701,386.
Janssen, Hermann W.; and Mooring, James F., 3,701,902.
Reese, Anthony L., 3,701,362.
Williams, Robert C., 3,701,382.
Drury, James A. Microscope slide dryer. 3,701,201, Cl. 34-60.000.
Du Chaffaut, Jean Amaudric: *See*—
Bennett, Ian Cameron; and Du Chaffaut, Jean Amaudric, 3,701,713.
Du Pont de Nemours, E. I., and Company: *See*—
Barkley, John R.; O'Reilly, James J.; and Waring, Robert K., Jr., 3,701,585.
Franklin, Richard C., 3,701,624.
Gray, Walter Clarke, 3,701,248.
Knoth, Walter H., Jr.; and Parshall, George W., 3,701,804.
Settlage, Paul Herman; and Thornton, Roger Lea, 3,701,745.
Wray, Rhodes Ebeling, 3,701,490.
Du Rocher, Gideon A.; and Miller, Ellsworth S., to Essex International, Inc. Connector for electrical terminals. 3,701,965, Cl. 339-60.00m.
DUAL Gebruder Steidinger: *See*—
Laue, Eckhard, 3,701,534.
Ducasse, Viateur. Excess smoke eliminating system for boilers. 3,701,622, Cl. 431-76.000.
Dugge, Richard H.; and Carney, John L., Jr., to ACF Industries Incorporated. Hopper outlet valve providing lading samplying. 3,701,460, Cl. 222-193.000.
Dummermuth, Ernst, to Allen-Bradley Company. Digital differential analyzer employing multiple overflow bits. 3,701,890, Cl. 235-150.310.
Dunn, George L.: *See*—
Berges, David A.; Dunn, George L.; and Hoover, John R. E., 3,701,775.
Dunne, Gilbert M., Jr.: *See*—
Rotsky, Bernard A.; and Dunne, Gilbert M., Jr., 3,701,236.
Dunning, Franklin W.; and Gorjanc, Henry A., to McNeil Corporation. Storage and retrieval apparatus. 3,701,442, Cl. 214-16.40a.
Durkee, Gale H. Adjustable rake. 3,701,243, Cl. 56-400.180.
Duro-Dyne Corporation: *See*—
Hinden, Milton; and Porat, David, 3,701,878.
Dusing, Gerhard: *See*—
Kuhner, Gerhard; Sauer, Heinrich; Jager, Gerhard; and Dusing, Gerhard, 3,701,480.
Duval, Georges A.; and Hernandez, Francois, to International Standard Electric Corporation. Selection systems for electrical circuits or equipments. 3,701,853, Cl. 179-18.0ha.
Eastman Kodak Company: *See*—
Barr, Charles R.; Williams, John; and Whitmore, Keith E., 3,701,783.
Brown, Barry M.; and Ray, Elbert L., 3,701,431.
Hagemeyer, Hugh J., Jr.; Hogan, Harold E.; and Johnson, Sam H., Jr., 3,701,760.
Meyer, Max F., Jr.; Combs, Robert L.; and Wooten, Willis C., Jr., 3,701,741.
Snapp, Thomas Carter, Jr.; Blood, Alden E.; and Hagemeyer, Hugh John, Jr., 3,701,798.
Ebeling, Jack F.: *See*—
Hanna, Daniel C.; Ebeling, Jack F.; and Hildebrand, David, 3,701,356.
Eberhart, Billie J.: *See*—
Hendricks, Robert G.; and Eberhart, Billie J., 3,701,545.
Eberts, Robert E.: *See*—
Bovarnick, Bennett; Eberts, Robert E.; and Nadkarni, Ravindra, 3,701,739.
Eck, Herbert Perciva. Bearing assembly. 3,701,571, Cl. 308-18.000.
Eck, Leonard F. Rotary engine. 3,701,306, Cl. 91-482.000.
Ecodyme Corporation, mesne: *See*—
Lindstol, Anders, 3,701,423.
Edamitsu, Masayuki: *See*—
Fujita, Hideo; Ishitobi, Masami; Suga, Hiroyoshi; Ishiwari, Keishiro; Yotsui, Yoshikazu; Yamashita, Tadao; Edamitsu, Masayuki; and Moriwaki, Shokichi, 3,701,720.
Edenhofer, Albrecht; and Spiegelberg, Hans, to Hoffmann-La Roche Inc. Substituted [3-(4-phenyl-1-piperazinyl) propoxy or propyl thio] anilines. 3,701,777, Cl. 260-268.0ph.
Edmonds, James T., Jr.: *See*—
Grimes, Monford D.; and Edmonds, James T., Jr., 3,701,665.
Egnelov, Gunnar Kristoffer; and Eriksson, Sune Vilhelm, to Atlas Capco Aktiebolag. Wire line core drilling apparatus. 3,701,389, Cl. 175-246.000.
Eichers, Ursula: *See*—
Magosch, Karl-Heinz; Rombusch, Konrad; and Eichers, Ursula, 3,701,765.
Eisele, Werner Frank; and Zimmermann, Detlef, to Northern Electric Company Limited. Multiple conductor cable terminal. 3,701,835, Cl. 174-41.000.
Eisenlohr, Dieter Moritz; and Romero, Roderic, to Bell Telephone Laboratories, Incorporated. Switching network test circuit. 3,701,863, Cl. 179-175.20r.
Ekama, Pieter J., to Diebold, Incorporated. Pneumatic tube system Y-tube diverter construction. 3,701,496, Cl. 243-29.000.
Eklund, Sven Emil, to AB Gustavsbergs Fabriker. Thermostat-controlled mixing valve. 3,701,472, Cl. 236-12.00r.
Eldon Industries, Inc.: *See*—
Paulson, Erland G.; and Mandala, Charles G., 3,701,391.
Electro Development Corporation: *See*—
Harris, Carl R.; Banks, Robert B.; and Soward, Dallas V., 3,701,279.
Electron Emission Systems, Inc., mesne: *See*—
Geppert, Donovan V., 3,701,919.
Elektriska Svetsningsaktiebolaget: *See*—
Andreasson, Per Arvid; and Persson, Mats Olof, 3,701,251.
Elizey, Samuel E., Jr.; Connick, William J., Jr.; Reeves, Wilson A.; and Drake, George L., Jr. Process for rendering cellulosics water-and oil-repellent. 3,701,626, Cl. 8-115.500.
Elscint Ltd.: *See*—
Suhami, Albert; Sabbah, Benjamin; Inbar, Dan; Yarom, Artzi; and Ben-Zeev, Dan, 3,701,901.
Emerson Electric Co.: *See*—
Krausser, Friedrich Johann, 3,701,951.
Emhart Corporation: *See*—
Kulig, Constantine W., 3,701,407.
Emmerson, Arthur F. Automotive vehicle body access and drain plug. 3,701,560, Cl. 296-1.00r.
Engelhard Minerals & Chemicals Corporation: *See*—
Mercade, Venancio V., 3,701,417.
England, Alfred W.: *See*—
Mendelson, Myron J.; and England, Alfred W., 3,701,977.
Entwisle, John Hubert; Lee, Denis; and Scrutton, Anthony, to Imperial Chemical Industries Limited. Electrodes for electrochemical processes. 3,701,724, Cl. 204-290.00f.
Epsco, Incorporated: *See*—
Miller, Herbert Edward, 3,701,978.
Erickson, Gustav F., to U.M.C. Industries, Inc. Money-handling device. 3,701,523, Cl. 270-67.000.
Erickson, Lloyd A.: *See*—
Pestka, John A.; and Erickson, Lloyd A., 3,701,302.
Eriksson, Sune Vilhelm: *See*—
Egnelov, Gunnar Kristoffer; and Eriksson, Sune Vilhelm, 3,701,389.
Erkfritz, Donald S., to Ingersoll Milling Machine Company. Slotting cutter and indexable inserts therefor. 3,701,187, Cl. 29-95.000.
Erlichman, Irving, to Polaroid Corporation. Reflex member velocity control means. 3,701,304, Cl. 95-42.000.
Ervin, Guy, III, to North American Rockwell Corporation. Process for a solid state cell by spraying with an organic solvent. 3,701,685, Cl. 136-83.00r.
ESB Incorporated: *See*—
Dermody, William J.; and Oltman, John E., 3,701,690.
Eskew, Mark F.; and Hyde, Beverly F., to Texas Instruments Incorporated. Process and system for routing interconnections between logic system elements. 3,702,004, Cl. 444-1.000.
Esquire, Inc.: *See*—
Mc Namara, Albert C., Jr., 3,701,898.
Essex International, Inc.: *See*—
Du Rocher, Gideon A.; and Miller, Ellsworth S., 3,701,965.
Esso Research and Engineering Company: *See*—
Maness, Dale D., 3,701,629.
Stenmark, Donald G., 3,701,813.
Worley, Arthur C.; and Kane, Ronald S., 3,701,359.
Ethicon, Inc.: *See*—
Beroff, Howard; and Richmond, Ernest L., 3,701,725.
Evans, James G.: *See*—
Gartman, William W.; Evans, James G.; and Allen, Harold A., 3,701,682.
Evans, Pat E.: *See*—
Congleton, David B.; Roberts, Donald L.; and Evans, Pat E., 3,701,999.
Evans, Ralph Henry, Jr.; and Holmlund, Chester Eric, to American Cyanamid Company. Preparation of 5,6-dihydro-5-hydroxy-6-propenyl-2- pyrone by fermentation and derivatives thereof. 3,701,787, Cl. 260-343.500.
Excel Mfg., Ltd.: *See*—
Malmgren, John Stanley, 3,701,276.
Ezekiel, Frederick D.: *See*—
Schubert, Dale W.; and Ezekiel, Frederick D., 3,701,499.
FA. Saba Schwarzwader Apparate-Bau-Anstalt August Schwer Sohne GmbH: *See*—
Jaag, Herbert, 3,701,958.
Fahrenkrug, Gunter: *See*—

Binder, Wolfgang; Kalkreuth, Hasso; Glaser, Josef; and Fahrenkrug, Gunter, 3,701,470.
Fairchild Industries, Inc.: *See—*
Jordan, David B., 3,701,288.
Fancher, Llewellyn W., to Stauffer Chemical Company. Plant growth regulators. 3,701,799, Cl. 260-468.00p.
Fanto-Kurtos, Peter Robert: *See—*
Berglund, Per Henrik Sixten; Fanto-Kurtos, Peter Robert; and Mattson, Nils Albert Uno, 3,701,621.
Farbenfabriken Bayer Aktiengesellschaft: *See—*
Leduc, Joseph-Adrien M.; Lurie, Charles; Kronig, Walter; and Konrad, Peter, 3,701,719.
Farone, Eugene Richard, to Lubrizol Corporation, The. Preparation of thermosetting compositions and thermoset resins from polymers of N--oxohydrocarbon-substituted acrylamides. 3,701,754, Cl. 260-64.000.
Farrell, Robert P., Jr., to United States of America, Interior, mesne. Snagging device for inverted grinder. 3,701,486, Cl. 241-46.110.
Farrissey, William J., Jr.: *See—*
Carleton, Peter S.; Farrissey, William J., Jr.; and Rose, James S., 3,701,756.
Fassler, Michael H.; and Brinker, Norman E., to United Aircraft Corporation. Process of casting utilizing magnesium oxide cores. 3,701,379, Cl. 164-132.000.
Fathauer, George H., to Overton Corporation. Sample scale. 3,701,390, Cl. 177-113.000.
Favreau, Marcel, to Vilas Industries Limited. Adjustable furniture leg. 3,701,506, Cl. 248-188.500.
Fearon, Joseph G.; and Battermann, George Monte Gilbert, to Morrison-Knudsen Company, Inc. Method and apparatus for laying railroad ties on a prepared road surface. 3,701,320, Cl. 104-6.000.
Feldmuhle Aktiengesellschaft: *See—*
Barnscheidt, Wolfgang, 3,701,335.
Fenton, Francis Michael: *See—*
Anderson, Harold Peter; and Fenton, Francis Michael, 3,701,854.
Fenwick, Jay G., to Streater Industries, Inc. Shelf and bracket assembly. 3,701,325, Cl. 108-1.000.
Fernandez, Jose J. Vacuum spectacle bridge. 3,701,592, Cl. 351-130.000.
Ferrara, Peter B., to United States of America, Army. Fiberoptic clearance light system. 3,701,498, Cl. 244-17.110.
Feucht, Jacob E., to Dresser Industries, Inc. Hydraulic drifter. 3,701,386, Cl. 173-78.000.
Feugere, Francis: *See—*
Quesnel, Guy; and Feugere, Francis, 3,701,487.
Fibreboard Corporation: *See—*
Masch, Helmut E. W., 3,701,525.
Fichtel & Sachs AG: *See—*
Schulz, Horst, 3,701,292.
Schwerdhoefer, Hans Joachim, 3,701,333.
Schwerdhofer, Hans Joachim; and Wolf, Gerhard Max, 3,701,546.
Vers, Rudi, 3,701,197.
Field, William J., to Fields Industrial Research (1971) Limited. Portable cutting torch apparatus. 3,701,515, Cl. 266-23.00k.
Fields Industrial Research (1971) Limited: *See—*
Field, William J., 3,701,515.
Finck, Patricia A., to Colgate-Palmolive Company. Automatic dishwashing compositions. 3,701,735, Cl. 252-99.000.
Finney, Philip F., to Thermo-Couple Products Company, Inc. Metal cast cooking unit having a temperature sensitive control sensor. 3,701,884, Cl. 219-449.000.
Firestone Tire & Rubber Company, The: *See—*
McGillvary, Daniel R., 3,701,374.
Fischer, Alfred; and Strawser, Terry M., to Tenneco Chemicals Inc. Oil-soluble mixed copper soap products. 3,701,729, Cl. 252-1.000.
Fischer, Jack, to Advertising Metal Display Co. Drawer slide assembly. 3,701,577, Cl. 312-339.000.
Fisher, Chester Donald, to Sprout, Waldron & Company, Inc. Pressurized refiner seal assembly. 3,701,488, Cl. 241-256.000.
Fisher Gange Limited: *See—*
Fisher, William Frederick, 3,701,377.
Graham, Eric Purdy, 3,701,378.
Fisher, Michael H., to Merck & Co., Inc. Imidazo [1,2-a] pyridines. 3,701,780, Cl. 260-290.800.
Fisher, William Frederick, to Fisher Gange Limited. Method and apparatus for die casting by pressure injection. 3,701,377, Cl. 164-113.000.
Fleischer, James F.: *See—*
De Vries, Robert C.; and Fleischer, James F., 3,701,826.
Fluoroware, Inc.: *See—*
Baker, William H., 3,701,558.
FMC Corporation: *See—*
Arnaud, Jose L., 3,701,637.
Goldstein, David, 3,701,737.
Radimer, Kenneth J.; and Munday, Theodore F., 3,701,825.
Willmore, Charles R., 3,701,840.
Folk, Kenneth Foster, to AMP Incorporated. Electrical bobbin with terminals. 3,701,961, Cl. 336-192.000.
Food Research & Equipment Company: *See—*
Boggs, Weldon C., 3,701,313.
Ford Motor Company: *See—*
Cagnon, Eugene C., 3,701,913.
Johnson, Olin B.; and Labana, Santokh S., 3,701,679.
Forestek, Clarence W. Method for producing fissures in metallic surfaces of chromium. 3,701,698, Cl. 156-18.000.
Fork, Frank W., to Robertson, H. H., Company. Multiple electrical service underfloor access housing. 3,701,837, Cl. 174-50.000.
Formica Corporation: *See—*
Giddings, Sydney Arthur; and Valerius, Paul Nicholas, 3,701,706.
Kelly, Peter Bernard, 3,701,711.
Fortini, Jack G.; Blair, Walter A.; and Grodsky, Gerold M., to Blair/Johnson, Inc. Simple protein and method of deriving it from liver using an aqueous solution of a divalent metal ion. 3,701,768, Cl. 260-112.00r.
Foster Wheeler Corporation: *See—*
Willis, Cullie B., Jr., 3,701,341.
Fougere, Guy L. Coin selector utilizing a coin impeller. 3,701,405, Cl. 194-101.000.
Frank, Benno: *See—*
Treptow, Heinz; Frank, Benno; and Schippers, Heinz, 3,701,268.
Frank, Robert G., to PPG Industries Inc. Moving glass locating devices. 3,701,643, Cl. 65-62.000.
Frank, Robert G., to PPG Industries, Inc. Method and apparatus for shaping glass sheets with opposed roller sets. 3,701,644, Cl. 65-106.000.
Franke, John L.: *See—*
Jacob, Abraham H.; and Franke, John L., 3,701,869.
Franklin, Dennis M.; Hornreich, Richard M.; and Rubinstein, Harvey, to Sylvania Electric Products, Inc. Magnetostatically-coupled thin-film magnetic memory devices. 3,701,983, Cl. 340-174.0qa.
Franklin, Richard C., to Du Pont de Nemours, E. I., and Company. Dyeing cotton and paper with bis(arylazo or sulfoarylazo)-J-acid urea reaction mixture and composition therefor. 3,701,624, Cl. 8-7.000.
French, William H.; and Rushton, Brian M., to Ashland Oil, Inc. Peroxide bleaching of epoxidized fatty acid esters. 3,701,767, Cl. 260-97.500.
Freudeberg, Jurgen; and Rudolff, Hermann, to U.S. Philips Corporation. Memory matrix unit. 3,701,982, Cl. 340-174.0ma.
Friedrich Uhde GmbH: *See—*
Staarmann, Herbert; Brieke, Hans-Gunter; and Gerdes, Dirk, 3,701,635.
Friesen, Peter. Trailer construction. 3,701,561, Cl. 296-27.000.
Fritzsche, Donald E., to General Electric Company. Work surface clamping means for drop-in cooking equipment. 3,701,171, Cl. 4-187.00a.
Froget, Pierre, "Griesser" Alpes Maritines. Device for slide-shifting and winding twin vertical screens or blades. 3,701,376, Cl. 160-121.000.
Frost, Wade W., to Oxford Industries, Inc. Garment retriever and stacker. 3,701,328, Cl. 112-121.290.
Fuji Photo Film Co., Ltd.: *See—*
Kondo, Asaji; Fujisaki, Hiroshi; Miyano, Shizuo; and Yazawa, Kenichiro, 3,701,663.
Fujio, Yoshinori: *See—*
Shimaya, Kazunori; Kaneko, Katsuzo; Fujio, Yoshinori; and Sato, Yoshihiro, 3,701,893.
Fujisaki, Hiroshi: *See—*
Kondo, Asaji; Fujisaki, Hiroshi; Miyano, Shizuo; and Yazawa, Kenichiro, 3,701,663.
Fujita, Hideo; Ishitobi, Masami; Suga, Hiroyoshi; Ishiwari, Keishiro; Yotsui, Yoshikazu; Yamashita, Tadao; Edamitsu, Masayuki; and Moriwaki, Shokichi, to Dainichi Nippon Cables Ltd. Manufacture of electrically insulating paper. 3,701,720, Cl. 204-132.000.
Fujitsu Limited: *See—*
Usuda, Shogo; Mizusasa , Susumu; and Tateno, Harunobu, 3,701,857.
Fukada, Kenzo: *See—*
Ueshima, Kumao; Fukada, Kenzo; Yoshinaga, Masakazu; and Nakazona, Kiroshi, 3,701,516.
Fukushima, Keitaro: *See—*
Kuratani, Keijiro; and Fukushima, Keitaro, 3,701,820.
Fukuyama, Shunsaku: *See—*
Nozawa, Shunichi; Kuroi, Hisashi; Hatada, Masamichi; and Fukuyama, Shunsaku, 3,701,925.
Fulcher, Junius H., to Cooper Industries, Inc. Adjustable positionable structural device. 3,701,226, Cl. 52-109.000.
Funakoshi, Yoshiro: *See—*
Heki, Takao; Yasumatsu, Katsuharu; Sawada, Koshichi; and Funakoshi, Yoshiro, 3,701,667.
Furst, Stefan, to Schlafhorst, W., & Co. Warp knitting machine. 3,701,267, Cl. 66-86.000.
Furusawa, Hironobu: *See—*
Sumoto, Misao; Komagata, Hideki; Matsumoto, Hiroshi; and Furusawa, Hironobu, 3,701,755.
Gabano, Jean-Paul; and Gerbier, Gerard Marcel, to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme). Non-aqueous electrolyte for lithium electrochemical generators. 3,701,688, Cl. 136-100.00r.
Gadler, Gustav Ake Bernhard. Transfer device for use in cutting units for paper sheets. 3,701,441, Cl. 214-8.5ss.
GAF Corporation: *See—*
Plue, Arnold F.; and Katz, Leon, 3,701,769.
Gagnon, Pierre; and Laforest, Pierre. Batching system. 3,701,409, Cl. 198-54.000.
Gaiser, Robert F., to Bendix Corporation, The. Hydraulic master cylinder. 3,701,257, Cl. 60-54.60f.

Gallant, Reginald R.; Swain, Roger S.; and Waterman, Neil S., to Atlantic Design & Development Corporation. Integrated push button panel for controlling aircraft instrumentalities. 3,701,945, Cl. 325-25.000.

Garand, Donald J.: *See—*
Borelli, Ronald F.; and Garand, Donald J., 3,701,337.

Garbuzov, Vladimir Mikhailovich: *See—*
Chelnokov, Ivan Ivanovich; Garbuzov, Vladimir Mikhailovich; Koshelev, A. Vladimir; Levit, Georgy Mikhailovich; Maltsev, Albert Alexandrovich; and Myachev, Vladimir Fedorovich, 3,701,402.

Gardner, Donald J. Vehicle headlight switch with time delay. 3,701,904, Cl. 307-10.0bp.

Garrett Corporation, The: *See—*
Matthews, Jennifer V.; and Hamrick, Thomas T., 3,701,536.

Gartman, William W.; Evans, James G.; and Allen, Harold A., to Texas Instruments Incorporated. Thin film deposition system. 3,701,682, Cl. 117-201.000.

Gas Council, The: *See—*
Nicklin, Thomas, 3,701,811.

Gasser, Hermann; and Hotz, Hansruedi, to Luwa AG. Method and apparatus for treatment of an endless fibre strand or the like. 3,701,182, Cl. 28-59.000.

Gassino, Teresio; and Olivei, Alfredo, to Olivetti, Ing. C., & C., S.p.A. Method of electrosensitive printing or recording and apparatus therefor. 3,702,001, Cl. 346-74.00e.

Gatti, Alvaro: *See—*
Tarducci, Tullio; Gatti, Alvaro; and Buffa, Antonio, 3,701,541.

Gebhart, Herbert J., Jr.; and Makin, Earle C., Jr., to Monsanto Company. Process for preparation of tricyclopentadiene. 3,701,812, Cl. 260-666.0py.

Gee, Wendell P.: *See—*
Donnelly, James F.; Gee, Wendell P.; and Phipps, Nelson S., 3,701,286.

Geerling, Leonardus Johannes, to Tektronix, Inc. Ramp generator a chart recorder. 3,701,993, Cl. 346-33.00r.

General Electric Company: *See—*
Chadwick, Philip, 3,701,938.
Cook, Newell C., 3,701,639.
Crivello, James V., 3,701,740.
De Vries, Robert C.; and Fleischer, James F., 3,701,826.
Fritzsche, Donald E., 3,701,171.
Grubb, Willard T.; and Macur, Robert Anthony, 3,701,687.
Henkes, John L., Jr., 3,701,581.
Holub, Fred F.; Berger, Abe; Hardman, Bruce B.; and Urkevich, Michael P., 3,701,795.
Mets, Edwin J., 3,701,696.
Miller, Richard H., 3,701,866.
Mundy, Joseph L., 3,701,980.
Richardson, Hugh H., 3,701,877.
Shaw, Harvey P., 3,701,753.

General Instrument Corporation: *See—*
Jacob, Abraham H.; and Franke, John L., 3,701,869.

General Kinetics, Inc.: *See—*
Gutterman, Robert P.; and Washington, Le Baron H., 3,701,565.

Gentry, Hermond G., to Mead Corporation, The. Packaging machine. 3,701,230, Cl. 53-48.000.

Georgia-Pacific Corporation: *See—*
Horowitz, Frederic; and Dede, Joseph B., Jr., 3,701,743.

Geppert, Donovan V., to Electron Emission Systems, Inc., mesne. Integrated vacuum circuits. 3,701,919, Cl. 313-250.000.

Gerbier, Gerard Marcel: *See—*
Gabano, Jean-Paul; and Gerbier, Gerard Marcel, 3,701,688.

Gerdes, Dirk: *See—*
Staarmann, Herbert; Brieke, Hans-Gunter; and Gerdes, Dirk, 3,701,635.

Germain, Leo M., to Gulf Oil Canada Limited. Adhesively laminated flexible webs. 3,701,710, Cl. 161-148.000.

Giddings, Sydney Arthur; and Valerius, Paul Nicholas, to Formica Corporation. Process for preparing a decorative laminate in which a thermoplastic film is used to absorb thermal shock shear stress. 3,701,706, Cl. 156-306.000.

Gilliam, Joe L., to Melvin, Mary E. Salt water sinker. 3,701,212, Cl. 43-44.870.

Gillig, Witmar: *See—*
Von, Angerer Roland; and Gillig, Witmar, 3,701,183.

Gilmore, Samuel E.: *See—*
Koomey, Paul C.; De Vries, Douwe; and Gilmore, Samuel E., 3,701,549.

Glanzstoff AG: *See—*
Dismon, Peter; and Jansen, Heinz, 3,701,244.

Glaser, David, to Burroughs Corporation. Display panel having gas-filled cells utilizing phosphor materials. 3,701,916, Cl. 313-108.00b.

Glaser, David, to Burroughs Corporation. System for operating a display panel. 3,701,924, Cl. 315-84.600.

Glaser, Josef: *See—*
Binder, Wolfgang; Kalkreuth, Hasso; Glaser, Josef; and Fahrenkrug, Gunter, 3,701,470.

Glinski, Vincent J., to Bell Telephone Laboratories, Incorporated. Monolithic integrated circuit structures and methods of making same. 3,701,198, Cl. 29-578.000.

Global Marine Inc.: *See—*
Koot, Nicholas L., 3,701,387.

Goede, Walter F., to Northrop Corporation. Inherent storage for charged particle beam scanner. 3,701,923, Cl. 315-12.000.

Goetz, George G. Light modulating deflectable membrane. 3,701,586, Cl. 350-161.000.

Goetz, Louis P.: *See—*
Calhoon, Charles D., Sr.; Goetz, Louis P.; and Smith, Harry B., 3,701,989.

Goldstein, David, to FMC Corporation. Sodium carbonate-sodium bicarbonate agglomerate. 3,701,737, Cl. 252-182.000.

Goldstein, Richard M.: *See—*
United States of America, National Aeronautics and Space Administration, 3,701,894.

Goldsworthy, William D.; and Bunnell, John A. Apparatus for winding filament about three axes of a mandrel. 3,701,489, Cl. 242-7.200.

Gomada, Nobuyasu; and Kosaka, Genzo, to Toyo Kogyo Co., Ltd. Apparatus for induction hardening of anti-wear mechanical members. 3,701,874, Cl. 219-10.570.

Gomez-de-Bonilla, Juan Kindelan Y.: *See—*
Vayssiere, Pierre; and Gomez-de-Bonilla, Juan Kindelan Y., 3,701,519.

Gono, Yoshio: *See—*
Sanjo, Sadao; Yamada Hiroshi; and Gono, Yoshio, 3,701,608.

Goodrich, B. F., Company, The: *See—*
Kuts, Mathew, 3,701,186.
McGinnis, Herbert E., 3,701,411.
Murphy, Walter T.; and Japs, Archie B., 3,701,681.

Goodrich, B. J., Company, The: *See—*
Zeffer, Arthur A.; and Briscoe, James A., 3,701,500.

Goold, Raymond. Coupling units for articulated vehicles. 3,701,547, Cl. 280-432.000.

Goransson, Ingemar E.: *See—*
Granstrom, Staffan N.; and Goransson, Ingemar E., 3,701,357.

Gorjanc, Henry A.: *See—*
Dunning, Franklin W.; and Gorjanc, Henry A., 3,701,442.

Goscenski, Edward J., Jr.: *See—*
Lewis, Richard L.; and Goscenski, Edward J., Jr., 3,701,305.

Goss, Gas, Inc.: *See—*
Goss, Herbert C., 3,701,463.

Goss, Herbert C., to Goss, Gas, Inc. Holding and carrying rack for miniature oxygen and fuel gas tanks. 3,701,463, Cl. 224-45.00r.

Gotch, Henry Edward: *See—*
Neale, Michael John; and Gotch, Henry Edward, 3,701,475.

Goto, Nobuo: *See—*
Miyauchi, Sakae; Tanaka, Kazumitsu; and Goto, Nobuo, 3,701,847.

Gould Inc., mesne: *See—*
Vignini, Walter R., 3,701,862.

Gourdine Systems, Inc.: *See—*
Rotsky, Bernard A.; and Dunne, Gilbert M., Jr., 3,701,236.

Grace, W. R., & Co.: *See—*
Daniels, David A.; and Wendler, Kenneth T., 3,701,730.
Lard, Edwin W., 3,701,721.
Peterson, John B., 3,701,282.
Sternau, Martin M., 3,701,234.

Graham, Eric Purdy, to Fisher Gange Limited. Method of injection die casting. 3,701,378, Cl. 164-113.000.

Granstrom, Staffan N.; and Goransson, Ingemar E., to Allmanna Svenska Elektriska Aktiebolaget. Electromagnetic valve means for tapping molten metal. 3,701,357, Cl. 137-81.500.

Gray, Bronis G., to Airco, Inc. Oxy-fuel burners in furnace tuyeres. 3,701,517, Cl. 266-29.000.

Gray, Walter Clarke, to Du Pont de Nemours, E. I., and Company. Interlaced multifilament yarn. 3,701,248, Cl. 57-153.000.

Green, Richard R.: *See—*
United States of America, National Aeronautics and Space Administration, 3,701,894.

Greenfield, Stanley A.: *See—*
Seidel, Michael C.; Von Meyer, William C.; and Greenfield, Stanley A., 3,701,784.

Greenway, John Michael, to Imperial Chemical Industries Limited. Ring threading tool. 3,701,246, Cl. 57-34.00r.

Grefco, Inc.: *See—*
Ruff, David L.; and Siddiqui, Nadeem U., 3,701,672.

Grier, John D., to Owens-Illinois, Inc. Method of increasing light transmission efficiency of gas discharge device. 3,701,184, Cl. 29-25.160.

Grimes, Monford D.; and Edmonds, James T., Jr., to Phillips Petroleum Company. Reduction of sulfur extraction from poly(arylene sulfied) coated cookware. 3,701,665, Cl. 99-1.000.

Grodsky, Gerold M.: *See—*
Fortini, Jack G.; Blair, Walter A.; and Grodsky, Gerold M., 3,701,768.

Gronke, Ronald E.; and Schultz, William H., to Skil Corporation. Circular saw. 3,701,369, Cl. 143-43.00c.

Grosseau, Albert A. G., to Societe Anonyme Automobiles Citroen. Vehicle suspension system. 3,701,542, Cl. 280-124.00b.

Grossman, James Douglas; and Light, Kenneth K., to International Flavors and Fragrances Inc. Alkyl esters of 4-chloro-alkyl resorcylic acid. 3,701,801, Cl. 260-473.00s.

Groth, George Stephen, to Bell Telephone Laboratories, Incorporated. Program for polling party line data stations for message pickup. 3,702,008, Cl. 444-1.000.

Grubb, Willard T.; and Macur, Robert Anthony, to General Electric Company. Electrode containing a catalytic coating of platinum, palladium, and a third metal and fuel cell utilizing same. 3,701,687, Cl. 136-86.00r.

Grumman Aerospace Corporation: *See—*
Bergin, Michael T.; and Bartolotta, Charles S., 3,701,602.

Grunewalder, Werner, to Henkel & Cie G.m.b.H. Process for the chemical cleaning of textiles. 3,701,627, Cl. 8-142.000.

Gstohl, Norbert; and Tauern, Dankmar, to Hilti Aktiengesellschaft. Electrical precleaning for stud-welding to a metal. 3,701,879, Cl. 219-99.000.

GTE Sylvania Incorporated: *See—*
Wanner, Louis R., 3,701,920.

Gudmestad, Ragnar, to Atros Engineering Company. Wire length measuring and cutting apparatus. 3,701,301, Cl. 83-151.000.

Guenther, Harvey C. Blood exchanging apparatus and process. 3,701,350, Cl. 128-214.00b.

Guidicelli, Charles, to Societe Anonyme STOP. Electromagnetic pump. 3,701,614, Cl. 417-413.000.

Guidicelli, Charles, to Societe Anonyme STOP. Control system for a windshield wiper and cleaner uint. 3,701,934, Cl. 318-102.000.

Guillot, Francis Jacques. Coin size tester preventing fraudulent operation of parking meters. 3,701,600, Cl. 194-74.000.

Gulf Oil Canada Limited: *See—*
Germain, Leo M., 3,701,710.

Gulf Research & Development Company: *See—*
Neighbors, Ralph P., 3,701,646.

Gutterman, Robert P.; and Washington, Le Baron H., to General Kinetics, Inc. Article input device for liquid-containing apparatus. 3,701,565, Cl. 302-14.000.

Haavaldsen, Johan: *See—*
Almen, Torsten H. O.; Haavaldsen, Johan; and Nordal, Vegard, 3,701,771.

Habib, Pierre Andre: *See—*
Puyo, Andre; and Habib, Pierre Andre, 3,701,554.

Hack, Al, & Associates, Inc.: *See—*
Hack, Albert G. W.; and Hamilton, John B., 3,701,651.

Hack, Albert G. W.; and Hamilton, John B., to Hack, Al, & Associates, Inc. Process for production of mercury. 3,701,651, Cl. 75-101.00r.

Hagemeyer, Hugh J., Jr.; Hogan, Harold E.; and Johnson, Sam H., Jr., to Eastman Kodak Company. Hydrocarbon dac-b resin prepared by polymerizing dac-b using two polymerization temperature ranges followed by hydrogenation. 3,701,760, Cl. 260-82.000.

Hagemeyer, Hugh John, Jr.: *See—*
Snapp, Thomas Carter, Jr.; Blood, Alden E.; and Hagemeyer, Hugh John, Jr., 3,701,798.

Hagiwara, Zenji, to Nippon Rensui Kabushiki Kaisha. Lithium isotope separation. 3,701,638, Cl. 23-312.000.

Haines, Jack A., to Heath Company. Variable width slit mechanism for use in a scanning monochromator. 3,701,589, Cl. 350-271.000.

Hall, Raymond Frederick: *See—*
Allen, David Henry Odhams; Hall, Raymond Frederick; and Weston, George Frederick, 3,701,918.

Hallerback, Stig Lennart, to SKF Industrial Trading and Development Company NV. Bearing support and cooling means. 3,701,911, Cl. 310-60.000.

Halpaap, Herbert: *See—*
Rossler, Hubert; Halpaap, Herbert; and Klatyk, Knut, 3,701,678.

Hamilton, John B.: *See—*
Hack, Albert G. W.; and Hamilton, John B., 3,701,651.

Hamilton Watch Company: *See—*
Bergey, John M.; Blouch, Eric L.; and Walton, Richard S., 3,701,249.

Hammes, Paul A.: *See—*
Morse, Lewis D.; and Hammes, Paul A., 3,701,668.

Hammond, Donald L., to Hewlett-Packard Company. Acousto-optical filter having scanned acoustic frequency compensated by controlled distributed birefringence. 3,701,583, Cl. 350-149.000.

Hamrick, Thomas T.: *See—*
Matthews, Jennifer V.; and Hamrick, Thomas T., 3,701,536.

Hanna, Daniel C.: *See—*
Hanna, Daniel C.; Ebeling, Jack F.; and Hildebrand, David (said Ebeling and said Hildebrand assors. to said), 3,701,356.

Hanna, Daniel C.; Ebeling, Jack F.; and Hildebrand, David, said Ebeling and said Hildebrand assors. to said Hanna, Daniel C. Car washing apparatus. 3,701,356, Cl. 134-58.00r.

Hansen, Stuart C., to Varian Associates. Microwave cavity resonator with printed circuit interior walls and modulation coils. 3,701,959, Cl. 333-83.00r.

Hardison, Leslie C., to Universal Oil Products Company. Method and means for two-stage catalytic treating of engine exhaust gases. 3,701,823, Cl. 423-213.000.

Hardman, Bruce B.: *See—*
Holub, Fred F.; Berger, Abe; Hardman, Bruce B.; and Urkevich, Michael P., 3,701,795.

Hare, Terence G., to Miller Manufacturing Company. Faucet body and method of manufacture. 3,701,364, Cl. 137-625.410.

Hargitay, Bartholomew, to Union Carbide Corporation. Process for the fractionation of polymers. 3,701,764, Cl. 260-88.301.

Harker, Robert Ian, to Johns-Manville Corporation. Hydrothermal synthesis, of perovskite composed of $CaO\text{-}TiO_2$. 3,701,828, Cl. 423-598.000.

Harokopus, William P.: *See—*
Lewis, Richard L.; Hickner, George B.; and Harokopus, William P., 3,701,568.

Harris, Carl R.; Banks, Robert B.; and Soward, Dallas V., to Electro Development Corporation. Aircraft weight and center of gravity indicator system. 3,701,279, Cl. 73-65.000.

Harris, Kenneth D. Clamp. 3,701,555, Cl. 287-110.000.

Harris, William G., Jr., to United States of America, Navy. Mooring line cutter system. 3,701,331, Cl. 114-221.00a.

Harris-Intertype Corporation: *See—*
Crum, James N., 3,701,464.
Procter, James F.; Mebus, Henry R.; De Young, Robert J.; and Coviello, Joseph, 3,701,176.
Sylvester, Peter A.; and Wojciechowski, Walter J., 3,701,316.

Harte, Kenneth J.: *See—*
Smith, Donald O.; Harte, Kenneth J.; and Cohen, Mitchell S., 3,701,979.

Hartley, David; Lunt, Lawrence Henry Charles; and Jack, David, to Allen & Hamburys Limited. Phenylethanolamines. 3,701,808, Cl. 260-556.00a.

Hartsell, Joe L. Collet assembly. 3,701,538, Cl. 279-30.000.

Harvey, Douglas G. Inflatable intravaginal applicator for animals. 3,701,351, Cl. 128-260.000.

Hasegawa, Hiroshi; and Iriuchijima, Makoto. Process for the production of methyl ethyl ketone from butene. 3,701,810, Cl. 260-597.00b.

Haslem, Alfred E. Tilting bed trailer. 3,701,445, Cl. 214-506.000.

Hatada, Masamichi: *See—*
Nozawa, Shunichi; Kuroi, Hisashi; Hatada, Masamichi; and Fukuyama, Shunsaku, 3,701,925.

Hawes, John E.: *See—*
Donninger, Cyril; Schofield, John A.; and Hawes, John E., 3,701,779.

Hayashibara Company: *See—*
Okada, Shigetaka; and Tsuyama, Naoto, 3,701,714.

Heartness, Olaf. Oil pollution barrier. 3,701,259, Cl. 61-1.00f.

Heath Company: *See—*
Haines, Jack A., 3,701,589.

Heath, Robert T.: *See—*
Webb, Richard C.; and Heath, Robert T., 3,701,885.

Hebeler, Charles B.: *See—*
Sanner, Gary L.; and Hebeler, Charles B., 3,701,971.

Heckert, David C., to Procter & Gamble Company, The. Preparation of alpha-haloketones using ultraviolet light. 3,701,722, Cl. 204-162.00e.

Heilman, Marlin S.; Kranys, Rudolph J.; and Jones, Donald, to Medrad, Inc. Angiographic injector equipment. 3,701,345, Cl. 08/22/72.

Heki, Takao; Yasumatsu, Katsuharu; Sawada, Koshichi; and Funakoshi, Yoshiro, to Takeda Chemical Industries, Ltd. Method for puffing gelatinized rice grains. 3,701,667, Cl. 99-81.000.

Hellar, Martin W.; and Kiener, Michael A., to Addressograph-Multigraph Corporation. Simultaneous conversion and fusion of electrostatically produced printing masters. 3,701,673, Cl. 117-17.500.

Heller, Martin G.; and Kelly, Donald. De-reeling apparatus for electrical components. 3,701,298, Cl. 83-23.000.

Hendricks, Robert G.; and Eberhart, Billie J. Frame for utilization with a three-wheel, pedal driven vehicle. 3,701,545, Cl. 280-282.

Hendrickson, George Vernon, to Viking Snowmobile, Inc. Drive means for snowmobile devices. 3,701,394, Cl. 180-5.00r.

Henicke, Heinz: *See—*
Rother, Wolfgang; Mordig, Eberhard; Wenzel, Erwin; Cronert, Dieter; Sand, Karl; Kasbohm, Joachim; Henicke, Heinz; Landmann, Helmut; and Stocker, Winfried, 3,701,881.

Henkel & Cie G.m.b.H.: *See—*
Grunewalder, Werner, 3,701,627.

Henkes, John L., Jr., to General Electric Company. Stereoscopic enhancement of pictorial displays. 3,701,581, Cl. 350-144.000.

Hennen, John Joseph, to Deere & Company. Harvesting machine. 3,701,239, Cl. 56-13.500.

Henriksen, Neils Juul: *See—*
Petersen, Tom Kastrup; and Henriksen, Neils Juul, 3,701,939.

Henry, Jean Claude; and Billon, Gerard, to Merlin Gerin Societe Anonyme. Double pressure compressed air electric apparatus having an air drying device. 3,701,867, Cl. 200-148.00e.

Hensen, Friedhelm: *See—*
Schippers, Heinz; Hensen, Friedhelm; and Lenk, Erich, 3,701,512.

Hepner, Charles F.; and Tzakis, George J., to Zenith Radio Corporation. Matrix amplifier network with novel D-C set-up arrangement. 3,701,843, Cl. 178-5.4sd.

Hercock, Robert James; and Scrutton, Simon Lindsay, to Ilford Limited. Liquid toners for electrophotography containing 12-hydroxy stearin. 3,701,731, Cl. 252-62.100.

Herff, Louis M., to Berry Metal Company. Oxygen lance control arrangement for basic oxygen furnace. 3,701,518, Cl. 266-34.01m.

Herman, Leslie E. Wire-formed pallet. 3,701,326, Cl. 108-53.000.

Hernandez, Francois: *See—*
Duval, Georges A.; and Hernandez, Francois, 3,701,853.

Herr, Milton E.: *See—*
Coats, John H.; Herr, Milton E.; and Herr, Ross R., 3,701,790.

Herr, Ross R.: *See—*
Coats, John H.; Herr, Milton E.; and Herr, Ross R., 3,701,790.

Herscovici, Saul: *See—*
Lemons, David Forrest; Marquart, Gordon Le Roy; and Herscovici, Saul, 3,701,393.

Hester, Jackson B., Jr., to Upjohn Company, The. 1-Carbolower alkoxy-6-phenyl-4h-s-triazols 1,4 benzodiazepine compounds. 3,701,782, Cl. 260-308.00r.

Hetrich, Harold Arthur, to Western Electric Company, Incorporated. Fluidic masking apparatus for etching. 3,701,705, Cl. 156-345.000.

Heuser, Gerhard: *See—*
Kiesow, Wilhelm; and Heuser, Gerhard, 3,701,196.

Hewlett-Packard Company: *See—*
Allen, Daniel E., 3,701,992.
Hammond, Donald L., 3,701,583.

Heyman Manufacturing Company: *See—*
Klumpp, Ferdinand, Jr., 3,701,505.
Hickner, George B.: *See—*
Lewis, Richard L.; Hickner, George B.; and Harokopus, William P., 3,701,568.
Hildebrand, David: *See—*
Hanna, Daniel C.; Ebeling, Jack F.; and Hildebrand, David, 3,701,356.
Hill, Benjamin T., Jr. Portable dual motion picture viewer. 3,701,596, Cl. 352-129.000.
Hilti Aktiengesellschaft: *See—*
Gstohl, Norbert; and Tauern, Dankmar, 3,701,879.
Hinden, Milton; and Porat, David, to Duro-Dyne Corporation. Sheet metal resistance welding pin. 3,701,878, Cl. 219-98.000.
Hintze, George, Jr. Fence mower. 3,701,238, Cl. 56-10.400.
Hinves, John R.: *See—*
Axelson, Carl A.; Hinves, John R.; Mc Gann, Elton Y.; and Johnson, Robert M., 3,701,319.
Hirsbrunner, Hans G.: *See—*
Santala, Teuvo J.; and Hirsbrunner, Hans G., 3,701,654.
Hochstein, Roland: *See—*
Thiele, Heinz; Becker, Dietrich; Hochstein, Roland; Rockstroh, Horst; and Lieckfeldt, Hans, 3,701,309.
Hoerner Waldorf Corporation: *See—*
Tull, Herbert G., III., 3,701,314.
Hoffmann-La Roche, Inc.: *See—*
Bartholini, Giuseppe, 3,701,829.
Edenhofer, Albrecht; and Spiegelberg, Hans, 3,701,777.
Hogan, Harold E.: *See—*
Hagemeyer, Hugh J., Jr.; Hogan, Harold E.; and Johnson, Sam H., Jr., 3,701,760.
Hojo, Takeshi, to Kabushikikaisha Tokyo Keiki Seizosho. Gyroscopic instrument. 3,701,200, Cl. 33-321.000.
Holler, Howard V., to Shell Oil Company. Polyalkenylarene compositions. 3,701,762, Cl. 260-88.200.
Holley, John D.: *See—*
Crosby, Robert C.; and Holley, John D., 3,701,483.
Holliday, Robert G., to Xerox Corporation. Expandable cassette. 3,701,495, Cl. 242-197.000.
Holmes, M., Manufacturing & Equipment, Ltd.: *See—*
Johnson, David John, 3,701,615.
Holmes, Walter V.; and Renz, John F., to Computer Test Corporation. Peak and hold system. 3,701,909, Cl. 307-246.000.
Holmlund, Chester Eric: *See—*
Evans, Ralph Henry, Jr.; and Holmlund, Chester Eric, 3,701,787.
Holroyd, John, to National Research Development, Corporation. Applicator for liquids. 3,701,604, Cl. 401-7.000.
Holub, Fred F.; Berger, Abe; Hardman, Bruce B.; and Urkevich, Michael P., to General Electric Company. Aliphatically unsaturated amic acid and silylated amic acid. 3,701,795, Cl. 260-448.20n.
Honeywell, Inc.: *See—*
Ball, Thomas E.; and Anderson, Vincent R., 3,701,962.
Borelli, Ronald F.; and Garand, Donald J., 3,701,337.
Merhar, Donald M., 3,701,903.
Proulx, George G., 3,701,494.
Shneider, Harold M.; and Bower, Robert G., 3,701,524.
Honeywell Information Systems Inc.: *See—*
Olney, Frederick Darwin, Jr., 3,701,329.
Honeywell Information Systems Inc., mesne: *See—*
Olney, Frederick D., Jr., 3,701,838.
Hong, Sung Whee: *See—*
Schichman, Daniel; and Hong, Sung Whee, 3,701,702.
Honzik, Richard A., to Northrop Corporation. Electron beam line scanner with transverse binary control. 3,701,922, Cl. 315-10.000.
Hoover, John R. E.: *See—*
Berges, David A.; Dunn, George L.; and Hoover, John R. E., 3,701,775.
Hope, Henry F.; and Hope, Stephen F. Film turnabout system. 3,701,526, Cl. 271-51.000.
Hope, Stephen F.: *See—*
Hope, Henry F.; and Hope, Stephen F., 3,701,526.
Hopkins, Lionel G.: *See—*
Braun, Richard E.; and Hopkins, Lionel G., 3,701,859.
Hopps, Harvey B.; Jackman, Dennis; and Biel, John H., to Aldrich Chemical Company, Inc. Dibenzofuranyl-aminoalcohols. 3,701,786, Cl. 260-293.580.
Hornreich, Richard M.: *See—*
Franklin, Dennis M.; Hornreich, Richard M.; and Rubinstein, Harvey, 3,701,983.
Horowitz, Frederic; and Dede, Joseph B., Jr., to Georgia-Pacific Corporation. Modified urea-formaldehyde plywood adhesive. 3,701,743, Cl. 161-262.000.
Hotz, Hansruedi: *See—*
Gasser, Hermann; and Hotz, Hansruedi, 3,701,182.
Hough, Douglas Gordon: *See—*
Lasko, John Jaye; and Hough, Douglas Gordon, 3,701,563.
House, Bruce F., to Shelley Manufacturing Company. Operating apparatus for cart. 3,701,396, Cl. 188-21.000.
Houser, Philip H., to Mead Corporation, The. Drop generator with rotatable transducer. 3,701,476, Cl. 239-102.000.
Howard, Herbert H., to Marine Swimming Pool Equipment Co. Swimming pool skimmer with vacuum and sweeping controls. 3,701,427, Cl. 210-169.000.
Howson, W. H., Limited: *See—*
Moore, Brian Joseph; and Wakinson, Leonard James, 3,701,657.
Hoyt Corporation: *See—*
Schell, Orville Carroll, 3,701,429.
Huddleston, Erie George, to Oxford Industries, Inc. Garments with detectable marks. 3,701,165, Cl. 2-243.00r.
Hudgins, Wilbur E.: *See—*
Rossman, Joseph J.; and Hudgins, Wilbur E., 3,701,537.
Huebner, Werner: *See—*
Born, Dieter; Stech, Peter; and Huebner, Werner, 3,701,535.
Humlong, Robert F.: *See—*
Pawsat, Carlton P.; and Humlong, Robert F., 3,701,289.
Pawsat, Carlton P.; and Humlong, Robert F., 3,701,290.
Hutter, James Francis; and Kelly, Leonard, to Sphere Investments Limited. Method of and apparatus for sorting ores. 3,701,419, Cl. 209-111.800.
Hyde, Beverly F.: *See—*
Eskew, Mark F.; and Hyde, Beverly F., 3,702,004.
Hyster Company, mesne: *See—*
Best, Eric, 3,701,211.
Iijima, Hiroshi; Terasaka, Masaji; and Tokita, Osamu, to Nippon Kokan Kabushiki Kaisha. Method of treating steel. 3,701,693, Cl. 148-6.240.
Iijima, Tetsya: *See—*
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsya, 3,701,293.
Ikegami, Shigeru: *See—*
Yoshida, Masatoshi; Saji, Yasuo; Saito, Kazuhisa; and Ikegami, Shigeru, 3,701,819.
Ilford Limited: *See—*
Brand, Boris Peter, 3,701,661.
Hercock, Robert James; and Scrutton, Simon Lindsay, 3,701,731.
Lee, Edward William; Tatchell, Keith Reid; Challis, Kenneth John; and Cockerton, Kenneth Archibald, 3,701,680.
Piccotti, Enzo, 3,701,662.
Pratt, John McDonald; and Whitear, Brian Ronald David, 3,701,660.
Illinois Tool Works, Inc.: *See—*
Pestka, John A.; and Erickson, Lloyd A., 3,701,302.
Wornke, Louis J.; and Pestka, John A., 3,701,373.
Imatt, Alex; and Brand, Derek. Elevated and concealed sprinkler system. 3,701,477, Cl. 239-276.000.
Imperial Chemical Industries Limited: *See—*
Entwisle, John Hubert; Lee, Denis; and Scrutton, Anthony, 3,701,724.
Greenway, John Michael, 3,701,246.
Osmond, Desmond Wilfred John; Wagstaff, Ian; and Waite, Frederick Andrew, 3,701,747.
Pratt, John McDonald; and Whitear, Brian Ronald David, 3,701,660.
Inbar, Dan: *See—*
Suhami, Albert; Sabbah, Benjamin; Inbar, Dan; Yarom, Artzi; and Ben-Zeev, Dan, 3,701,901.
Industrial Research Products, Inc.: *See—*
Carlson, Elmer Victor; and Killion, Mead Clifford, 3,701,865.
Ingalls, Daniel H. H., Jr., to United Data Services. Execution time analyzer. 3,702,005, Cl. 444-1.000.
Ingberman, Arthur K.: *See—*
Keogh, Michael J.; and Ingberman, Arthur K., 3,701,806.
Ingersoll Milling Machine Company: *See—*
Erkfritz, Donald S., 3,701,187.
Ingvorsen, Helmuth. Substrate-containing test container for the cultivation and inspection of micro organisms. 3,701,717, Cl. 195-139.000.
Institut de Recherches de la Siderurgie Francaise: *See—*
Vayssiere, Pierre; and Gomez-de-Bonilla, Juan Kindelan Y., 3,701,519.
Institutt for Atomenergi: *See—*
Lenschow, Rolf Johan, 3,701,227.
International Business Machines Corporation: *See—*
Buslik, Walter S.; and Chou, Albert S., 3,701,610.
Carter, William C.; and Schneider, Peter R., 3,701,892.
Davis, Roderic A., II, 3,702,007.
Doo, Ven Y.; Regh, Joseph; and Seto, David K., 3,701,659.
Jones, John Earle, 3,701,886.
Page, Josiah B., 3,702,006.
Revitz, Martin; and Thompson, James M., 3,701,931.
International Flavors and Fragrances Inc.: *See—*
Grossman, James Douglas; and Light, Kenneth K., 3,701,801.
International Paper Company: *See—*
Tuitt, Milton James, 3,701,415.
International Standard Electric Corporation: *See—*
Duval, Georges A.; and Hernandez, Francois, 3,701,853.
International Telephone and Telegraph Corporation: *See—*
Miller, Charles Eveleigh; and Schlatter, Gerald Lance, 3,701,952.
Pate, James Ronald, 3,701,896.
Staller, Karel Jan, 3,701,995.
Intertherm Limited: *See—*
Witsey, Noel John Charles; and Clark, James Charles, 3,701,875.
Iriuchijima, Makoto: *See—*
Hasegawa, Hiroshi; and Iriuchijima, Makoto, 3,701,810.
Isaacson, Boris. Method of and apparatus for treating a gas to remove foreign constituents therefrom. 3,701,235, Cl. 55-84.000.
Ishigami, Masaki: *See—*
Nogami, Sumitaka; Ishigami, Masaki; and Kurita, Jiro, 3,701,816.
Ishitobi, Masami: *See—*

Fujita, Hideo; Ishitobi, Masami; Suga, Hiroyoshi; Ishiwari, Keishiro; Yotsui, Yoshikazu; Yamashita, Tadao; Edamitsu, Masayuki; and Moriwaki, Shokichi, 3,701,720.

Ishiwari, Keishiro: *See—*
Fujita, Hideo; Ishitobi, Masami; Suga, Hiroyoshi; Ishiwari, Keishiro; Yotsui, Yoshikazu; Yamashita, Tadao; Edamitsu, Masayuki; and Moriwaki, Shokichi, 3,701,720.

Isojima, Tsuyoshi: *See—*
Miyamoto, Hiroshi; Isojima, Tsuyoshi; and Minowa, Osamu, 3,701,317.

Ito, Shin; Kubo, Seitoku; and Mori, Takakazu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic control system for automatic transmission. 3,701,294, Cl. 74-866.000.

ITT Industries, Inc.: *See—*
Kreutter, Erich, 3,701,967.

Iwawaki, Yasutaka; Yoshikawa, Minoru; and Usui, Yukio, to Canon Kabushiki Kaisha. Magnetic recording and reproducing apparatus with time control in cartridge. 3,701,860, Cl. 179-100.20z.

Iyer, Kishori S.: *See—*
Jones, Peter Hadley; and Iyer, Kishori S., 3,701,770.

Jaag, Herbert, to FA. Saba Schwarzwader Apparate-Bau-Anstalt August Schwer Sohne GmbH. Multisection bandpass filter from small signal circuits. 3,701,958, Cl. 333-70.00s.

Jachimek, Thomas P.; and Murrell, Thomas A., to Seeburg Corporation of Delaware, The. Selecting apparatus and method for phonograph. 3,701,970, Cl. 340-162.000.

Jack, David: *See—*
Hartley, David; Lunt, Lawrence Henry Charles; and Jack, David, 3,701,808.

Jackman, Dennis: *See—*
Hopps, Harvey B.; Jackman, Dennis; and Biel, John H., 3,701,786.

Jackson, Hosea: *See—*
Mosley, Sterling; and Jackson, Hosea, 3,701,986.

Jackson, James C., to Phillips Petroleum Company. Method of heat sealing a peelable cover onto a container. 3,701,699, Cl. 156-69.000.

Jacob, Abraham H.; and Franke, John L., to General Instrument Corporation. Touch switch array panel. 3,701,869, Cl. 200-167.00r.

Jacobs, Richard Lee: *See—*
Saaty, Nabil Najib; and Jacobs, Richard Lee, 3,701,796.

Jacobson, Gunnar, to Aktiebolaget Bofors. Coupling device for pipes with circular cross sections. 3,701,550, Cl. 285-39.000.

Jager, Gerhard: *See—*
Kuhner, Gerhard; Sauer, Heinrich; Jager, Gerhard; and Dusing, Gerhard, 3,701,480.

Jamesbury Corporation: *See—*
Donnelly, James F.; Gee, Wendell P.; and Phipps, Nelson S., 3,701,286.

Jansen, Heinz: *See—*
Dismon, Peter; and Jansen, Heinz, 3,701,244.

Janssen, Hermann W.; and Mooring, James F., to Dresser Industries, Inc. Dual detector compensated density wall logging system. 3,701,902, Cl. 250-83.30r.

Japan Exlan Company, Limited: *See—*
Kuratani, Keijiro; and Fukushima, Keitaro, 3,701,820.

Japs, Archie B.: *See—*
Murphy, Walter T.; and Japs, Archie B., 3,701,681.

Jarman, Alonzo B.: *See—*
Mayer, Gerald C.; Vaka, Gregory A.; Zuckermann, Raymond S.; and Jarman, Alonzo B., 3,701,414.

Jefferson, Donald E.: *See—*
Berkeley, Arnold D.; Bold, Eugene W.; Jefferson, Donald E.; and Zeller, Gerard A., 3,701,972.

Jenkins, Cecil: *See—*
Woolslayer, Homer J.; Woolslayer, Joseph R.; Jenkins, Cecil; and Campbell, Erwin A., 3,701,435.

Jenkinson, Frank Edward, to Patented Devices (Proprietary) Limited. Location of faults in cables. 3,701,927, Cl. 317-16.000.

Jenoptik Jena, G.m.b.H.: *See—*
Trebitz, Doris; and Rumpoldin, Ernst, 3,701,588.
Zollner, Friedrich, 3,701,579.

Jensen, Douglas S., to Tonka Corporation. Toy vehicle cab assembly. 3,701,217, Cl. 46-222.000.

Jentsch, Dietrich; and Cleff, Herbert, to Dorken & Mankel KG. Door closer. 3,701,180, Cl. 16-55.000.

Johanson, John E., to Johanson Manufacturing Corporation. Variable disk capacitors. 3,701,932, Cl. 317-254.000.

Johanson Manufacturing Corporation: *See—*
Johanson, John E., 3,701,932.

Johansson, Hans Arne Valendier, to Mo och Domsjo Aktiebolag. Tray-like stackable container. 3,701,467, Cl. 229-31.00r.

Johns-Manville Corporation: *See—*
Donovan, Howard Gleason, 3,701,484.
Harker, Robert Ian, 3,701,828.

Johnson, David John, to Holmes, M., Manufacturing & Equipment, Ltd. Tire vulcanizing machine. 3,701,615, Cl. 425-23.000.

Johnson, Olin B.; and Labana, Santokh S., to Ford Motor Company. Vinyl resin and graded acrylic rubber-urethane-acrylate paint and painting process. 3,701,679, Cl. 117-93.310.

Johnson, Robert C. Deep hole drilling tool. 3,701,607, Cl. 408-59.000.

Johnson, Robert M.: *See—*
Axelson, Carl A.; Hinves, John R.; Mc Gann, Elton Y.; and Johnson, Robert M., 3,701,319.

Johnson, Sam H., Jr.: *See—*
Hagemeyer, Hugh J., Jr.; Hogan, Harold E.; and Johnson, Sam H., Jr., 3,701,760.

Johnson, William R.; Sevy, William R.; Weigel, James E.; and Taller, Robert A., to Union Carbide Corporation. Plasticized non-aqueous methyl methacrylate polymer dispersion coating compositions. 3,701,746, Cl. 260-31.600.

Jones, Donald: *See—*
Heilman, Marlin S.; Kranys, Rudolph J.; and Jones, Donald, 3,701,345.

Jones, Donald E.: *See—*
Wise, David F.; Tyndall, R. B.; and Jones, Donald E., 3,701,240.

Jones, John Earle, to International Business Machines Corporation. Method of representing data codes with equal width bar and device for reading same. 3,701,886, Cl. 235-61.11e.

Jones, Lawrence T.: *See—*
Smith, Jay, III; Schmidt, Gerald W.; and Jones, Lawrence T., 3,701,216.

Jones, Peter Hadley; and Iyer, Kishori S., to Abbott Laboratories. 9,11-Cyclic boronate esters of the 6,9-hemiketal of erythromycin A. 3,701,770, Cl. 260-210.00e.

Jones, Reginald A.: *See—*
Clark, Wallace; Jones, Reginald A.; and Teeters, James L., 3,701,543.

Jordan, David B., to Fairchild Industries, Inc. Control apparatus having a finger operated dual motion control device. 3,701,288, Cl. 74-471.0xy.

Kabushiki Kaisha Nakamura Seisakusho: *See—*
Shirou, Mende, 3,701,295.

Kabushikikaisha Tokyo Keiki Seizosho: *See—*
Hojo, Takeshi, 3,701,200.

Kadono, Yoji; Ogasawara, Yukio; and Kamo, Keizo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of fixing a bearing cup in a Hooke S type universal joint. 3,701,189, Cl. 29-148.40a.

Kaiser Aluminum & Chemical Corporation: *See—*
Richter, Robert K.; and Shkredka, Jurek, 3,701,380.

Kaiser, Nils. Process and double-bridge arrangement for examination of rapid phase and amplitude changes of high-frequency waves caused by a medium under test. 3,701,943, Cl. 324-58.50r.

Kalkreuth, Hasso: *See—*
Binder, Wolfgang; Kalkreuth, Hasso; Glaser, Josef; and Fahrenkrug, Gunter, 3,701,470.

Kallrath, Gottfried; Knorre, Helmut; Meyer-Simon, Eugen; and Biegler, Hanns, to Deutsche Gold- und Silber-Scheideanstalt vormal Roesaler. Process for the non-electrolytic time metallizing of non-conductors. 3,701,675, Cl. 117-47.00a.

Kamimura, Haruo: *See—*
Nagai, Hiroshi; and Kamimura, Haruo, 3,701,272.

Kamo, Keizo: *See—*
Kadono, Yoji; Ogasawara, Yukio; and Kamo, Keizo, 3,701,189.

Kamphausen, Dan, to Twentieth Century Products Corporation. Toilet flush valve assembly. 3,701,169, Cl. 4-57.000.

Kane, Ronald S.: *See—*
Worley, Arthur C.; and Kane, Ronald S., 3,701,359.

Kaneko, Katsuzo: *See—*
Shimaya, Kazunori; Kaneko, Katsuzo; Fujio, Yoshinori; and Sato, Yoshihiro, 3,701,893.

Kannenberg, Karl G.: *See—*
Bader, Erich; Kannenberg, Karl G.; and Ricke, Hans-Benno, 3,701,676.

Karobath, Ernst; and Pultizer, Wolfgang, to Telephone- und Telegraphen-Fabriks Aktiengesellschaft Kapsch & Sonne, Firma. Primary cells. 3,701,689, Cl. 136-135.00r.

Kasazima, Masao, to Alps Electric Co., ltd. Single control device for plural variable resistors. 3,701,963, Cl. 338-128.000.

Kasbohm, Joachim: *See—*
Rother, Wolfgang; Mordig, Eberhard; Wenzel, Erwin; Cronert, Dieter; Sand, Karl; Kasbohm, Joachim; Henicke, Heinz; Landmann, Helmut; and Stocker, Winfried, 3,701,881.

Katchka, Jay R. Flow control device with pressure regulation. 3,701,598, Cl. 137-599.000.

Katz, Leon: *See—*
Plue, Arnold F.; and Katz, Leon, 3,701,769.

Katzenfurt, Karl Clos; and Keiner, Fritz, to Leitz, Ernst, G.m.b.H. Shutter release mechanism in photographic cameras. 3,701,307, Cl. 95-10.0po.

Kawai, Shinji, to Aisin Seiki Kabushiki Kaisha. Braking force regulating assembly. 3,701,616, Cl. 303-22.00r.

Kawakami, Yukichika: *See—*
Segawa, Masahiro; and Kawakami, Yukichika, 3,701,749.

Keiner, Fritz: *See—*
Katzenfurt, Karl Clos; and Keiner, Fritz, 3,701,307.

Keiner, Heinz, to Leitz, Ernst, G.m.b.H. Automatic lap dissolve for motion picture cameras. 3,701,594, Cl. 352-91.000.

Keiner, Heinz; and Schafer, Wilhelm, to Leitz, Ernst, G.m.b.H. Movie camera with cam-driven gripper. 3,701,597, Cl. 352-194.000.

Kelly, Donald: *See—*
Heller, Martin G.; and Kelly, Donald, 3,701,298.

Kelly, Leonard: *See—*
Hutter, James Francis; and Kelly, Leonard, 3,701,419.

Kelly, Peter Bernard, to Formica Corporation. Decorative aluminum clad laminate. 3,701,711, Cl. 161-214.000.

Kemmerling, Arthur E. Choker-type collar. 3,701,339, Cl. 119-106.000.

Kendall, Lytton A., Jr., to Ohio State University, The. Wire drawing apparatus using vibratory-mechanical energy and curved transmission line. 3,701,271, Cl. 72-56.000.

Kenney, Harold E.: *See—*
Maerker, Gerhard; and Kenney, Harold E., 3,701,802.

Kenwood Manufacturing (Woking) Limited: *See—*
Collie, Arthur A., 3,701,935.

Keogh, Michael J.; and Ingberman, Arthur K., to Union Carbide Corporation. Process for preparing a mixture of aromatic sulfones and aromatic sulfonyl chlorides. 3,701,806, Cl. 260-543.00r.

Kiener, Michael A.: *See—*
Hellar, Martin W.; and Kiener, Michael A., 3,701,673.

Kiesow, Wilhelm; and Heuser, Gerhard, to Uhde, Friedrich, GmbH. Method of making welded joints. 3,701,196, Cl. 29-494.000.

Killion, Mead Clifford: *See—*
Carlson, Elmer Victor; and Killion, Mead Clifford, 3,701,865.

Kim, Raymond W. H.: *See—*
Thomsen, Jack W.; Nupnau, Arthur E.; Kim, Raymond W. H.; and Cherniavskyj, Jaroslav, 3,701,595.

Kimble, Floyd E.: *See—*
Kimble, Floyd E.; and Buchsieb, Richard H. (said Buchsieb assor. of), 3,701,485.

Kimble, Floyd E.; and Buchsieb, Richard H., said Buchsieb assor. of 4/5 to Kimble, Floyd E. Rotor construction for impact crusher. 3,701,485, Cl. 241-32.000.

Kimbrough, Laurence B., to RCA Corporation. Apparatus and method for applying a bead of sealing material to a sealing surface of a cathode-ray tube. 3,701,674, Cl. 117-43.000.

Kinetic Lighting: *See—*
Pennington, Davis W.; and Taylor, Ruth N., 3,701,897.

Kinghorn, John S.: *See—*
Wagoner, Robert B.; and Kinghorn, John S., 3,701,458.

Kinkel, Christian F., to American Can Company. Method and tool for forming a score. 3,701,330, Cl. 113-15.00a.

Kinney, Layton Frederick, to Armour Industrial Chemical Company, mesne. Polymerization of unsaturated compounds with salts of arylaliphatic carboxylic acids. 3,701,744, Cl. 260-23.7.

Kirkwood, Loren Robert; Cochran, Larry Allen; and Altmanshofer, Robert Dale, to RCA Corporation. Color compensating networks with range limitation. 3,701,842, Cl. 178-5.4he.

Klatyk, Knut: *See—*
Rossler, Hubert; Halpaap, Herbert; and Klatyk, Knut, 3,701,678.

Klein, Schanzlin & Becker A.G.: *See—*
Born, Dieter; Stech, Peter; and Huebner, Werner, 3,701,535.

Klumpp, Ferdinand, Jr., to Heyman Manufacturing Company. Cable connector. 3,701,505, Cl. 248-56.000.

Knorr-Bremse GmbH: *See—*
Reitz, Reinhard, 3,701,570.

Knorre, Helmut: *See—*
Kallrath, Gottfried; Knorre, Helmut; Meyer-Simon, Eugen; and Biegler, Hanns, 3,701,675.

Knoth, Walter H., Jr.; and Parshall, George W., to Du Pont de Nemours, E. I., and Company. Process for adipic acid manufacture. 3,701,804, Cl. 260-530.00r.

Kobayashi, Tatsuo; and Ota, Yoshiharu, to Minolta Camera Kabushiki Kaisha. Attachable test device for a flash device. 3,701,942, Cl. 324-51.000.

Kobusch, Earl W. Method of framing a picture and product thereof. 3,701,209, Cl. 40-152.100.

Koch, Carl, to Sinar AG Schaffhausen. Optical attachment for viewing a focusing screen of a camera. 3,701,582, Cl. 350-145.000.

Koehring Company: *See—*
Brown, Gaylor W.; Brushaber, Larry; and Brown, Melvin L., 3,701,708.

Kojima, Tadashi, to Konishiroku Photo Industry Co., Ltd. Image focusing lens system for copying machines. 3,701,587, Cl. 350-202.000.

Koltermann, Jadwiga: *See—*
Michejda, Oskar, 3,701,254.

Komagata, Hideki: *See—*
Sumoto, Misao; Komagata, Hideki; Matsumoto, Hiroshi; and Furusawa, Hironobu, 3,701,755.

Komline-Sanderson Engineering Corporation: *See—*
Schlegel, William L., 3,701,432.

Kondo, Asaji; Fujisaki, Hiroshi; Miyano, Shizuo; and Yazawa, Kenichiro, to Fuji Photo Film Co., Ltd. Photographic light-sensitive material. 3,701,663, Cl. 96-86.000.

Kondo, Isamu. Stop ring. 3,701,303, Cl. 85-8.800.

Konig, Robert J.: *See—*
Rakow, Marvin S.; and Konig, Robert J., 3,701,641.

Konishiroku Photo Industry Co., Ltd.: *See—*
Kojima, Tadashi, 3,701,587.

Konrad, Peter: *See—*
Leduc, Joseph-Adrien M.; Lurie, Charles; Kronig, Walter; and Konrad, Peter, 3,701,719.

Koomey, Paul C.; De Vries, Douwe; and Gilmore, Samuel E. Connector. 3,701,549, Cl. 285-24.000.

Koot, Nicholas L., to Global Marine Inc. Core sampling apparatus. 3,701,387, Cl. 175-6.000.

Kormanik, Richard A., to Chainbelt, Rex, Inc. Two-stage aerobic and facultative waste treatment. 3,701,727, Cl. 210-14.000.

Kosaka, Genzo: *See—*
Gomada, Nobuyasu; and Kosaka, Genzo, 3,701,874.

Koshelev, A. Vladimir: *See—*
Chelnokov, Ivan Ivanovich; Garbuzov, Vladimir Mikhailovich; Koshelev, A. Vladimir; Levit, Georgy Mikhailovich; Maltsev, Albert Alexandrovich; and Myachev, Vladimir Fedorovich, 3,701,402.

Kovic, Joseph J., to Packaging Industries, Inc. Apparatus and method for transporting articles. 3,701,297, Cl. 83-13.000.

Krakauer, Sidney; and Rosenberg, David, to Pall Corporation. Filter for use in the filtration of blood. 3,701,433, Cl. 210-436.000.

Kranys, Rudolph J.: *See—*
Heilman, Marlin S.; Kranys, Rudolph J.; and Jones, Donald, 3,701,345.

Krausser, Friedrich Johann, to Emerson Electric Co. Digital indicator for use with turnable electronic apparatus. 3,701,951, Cl. 325-455.000.

Kreutter, Erich, to ITT Industries, Inc. Female connector strip with interchangeably retained contact springs. 3,701,967, Cl. 339-217.00s.

Krey, Roger A. Method of making ceramic electrical device. 3,701,578, Cl. 316-19.000.

Kroekel, Charles Henry, to Rohm & Haas Company. Unsaturated polyester resinous compositions. 3,701,748, Cl. 260-40.000.

Kronig, Walter: *See—*
Leduc, Joseph-Adrien M.; Lurie, Charles; Kronig, Walter; and Konrad, Peter, 3,701,719.

Krumholz, Frank C., to Allis-Chalmers Manufacturing Company. Planter and method of preparing soil. 3,701,327, Cl. 111-81.000.

Kruthaupt, Charles H. Exercising apparatus. 3,701,529, Cl. 272-83.00r.

Kubo, Seitoku: *See—*
Ito, Shin; Kubo, Seitoku; and Mori, Takakazu, 3,701,294.

Kuhi, Burkhart: *See—*
Wirth, Walter; and Kuhi, Burkhart, 3,701,392.

Kuhlman Corporation: *See—*
Risk, Jerry, 3,701,926.

Kuhner, Gerhard; Sauer, Heinrich; Jager, Gerhard; and Dusing, Gerhard, to Deutsche Gold- und Silber-Scheideanstalt vormal Roessler. Apparatus and process for atomizing liquids, particularly carbon black raw materials. 3,701,480, Cl. 239-420.000.

Kuiken, Hendrik, to U.S. Philips Corporation. Toothed gearing. 3,701,287, Cl. 74-462.000.

Kulig, Constantine W., to Emhart Corporation. Glassware transfer mechanism. 3,701,407, Cl. 198-20.000.

Kuntz, Jonathan C. Cassette tape cleaner. 3,701,178, Cl. 15-308.000.

Kupsky, George A., to Burroughs Corporation. Display panel having a plurality of arrays of gas-filled cells. 3,701,917, Cl. 313-188.000.

Kuraray Co., Ltd.: *See—*
Sogi, Hidenobu, 3,701,701.

Kuratani, Keijiro; and Fukushima, Keitaro, to Japan Exlan Company, Limited. Process for high speed wet spinning of acrylonitrile fibers. 3,701,820, Cl. 264-182.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Segawa, Masahiro; and Kawakami, Yukichika, 3,701,749.

Kurita, Jiro: *See—*
Nogami, Sumitaka; Ishigami, Masaki; and Kurita, Jiro, 3,701,816.

Kurland, Jerome J. Speed register. 3,701,471, Cl. 235-78.000.

Kuroi, Hisashi: *See—*
Nozawa, Shunichi; Kuroi, Hisashi; Hatada, Masamichi; and Fukuyama, Shunsaku, 3,701,925.

Kuts, Mathew, to Goodrich, B. F., Company, The. Trimming machine. 3,701,186, Cl. 29-33.00a.

Kwanten, Ferdinand J. G.: *See—*
De Rooij, Abraham H.; and Kwanten, Ferdinand J. G., 3,701,809.

Kyoikushuppan Co., Ltd.: *See—*
Sakamoto, Tsuneo, 3,701,214.

Labana, Santokh S.: *See—*
Johnson, Olin B.; and Labana, Santokh S., 3,701,679.

Labelle, Harold E., Jr.; and Little, William T., to Tyco Laboratories, Inc. Crystal growing apparatus. 3,701,636, Cl. 23-301.0sp.

Laboue, Bernard Andre, to Societe Industrielle Honeywell Bull. Support assembly for electrolytic deposition on contact element. 3,701,726, Cl. 204-297.00r.

Lado, William J., to Pettibone Corporation. System for automatically paying-out line proportional to extension of crane boom. 3,701,439, Cl. 212-55.000.

Laforest, Pierre: *See—*
Gagnon, Pierre; and Laforest, Pierre, 3,701,409.

Laguerre, Leon Ker, to Minigrip, Inc. Apparatus for assembling a slider on a fastener strip. 3,701,191, Cl. 29-207.5sl.

Laguerre, Leon Ker, to Minigrip, Inc. Mechanism for assembling sliders on interlockin fastener strips. 3,701,192, Cl. 29-207.5sl.

Lahme, Norbert: *See—*
Sassmannshausen, Guenter; and Lahme, Norbert, 3,701,691.

Lakshminarayanan, Krishnaiyer, to Dawe's Laboratories, Inc. Method for the production of glucose oxidase. 3,701,715, Cl. 195-65.000.

Lambert, Robert E.; Beal, Edward W.; and Bacewicz, Anthony J., to Connecticut International Corporation. Optical failsafe airplane landing guidance system. 3,701,969, Cl. 340-25.000.

Lambrecht, Ralph E., to Outboard Marine Corporation. Marine propeller with resilient hub structure. 3,701,611, Cl. 416-134.000.

Lamson & Sessions Co., The: *See—*
Breed, Arthur R., 3,701,372.

Landmann, Helmut: *See—*
Rother, Wolfgang; Mordig, Eberhard; Wenzel, Erwin; Cronert, Dieter; Sand, Karl; Kasbohm, Joachim; Henicke, Heinz; Landmann, Helmut; and Stocker, Winfried, 3,701,881.

Lard, Edwin W., to Grace, W. R., & Co. Curable liquid polyene-polythiol compositions containing polyacrylicacid and derivatives thereof. 3,701,721, Cl. 204-159.160.
Larson, Leighton W. Bi-valved cast. 3,701,349, Cl. 128-82.100.
Lasko, John Jaye; and Hough, Douglas Gordon, to Hough, Douglas Gordon. Locking means for dump truck. 3,701,563, Cl. 298-38.000.
Laue, Eckhard, to DUAL Gebruder Steidinger. Photoelectric switching device for record players. 3,701,534, Cl. 274-1.001.
Laval, Claude C., Jr. Sewage solid separating device. 3,701,425, Cl. 210-136.000.
Lavalou, Michel: *See—*
Papee, Denis; and Lavalou, Michel, 3,701,718.
Lawrence, Frank D. Holders for containers. 3,701,416, Cl. 206-65.00c.
Lazarus, Stanley David; and Lofguist, Robert Alden, to Allied Chemical Corporation. Orthoester catalysis of polyester polycondensation. 3,701,757, Cl. 260-75.00r.
Le Vantine, Allan D., to TRW Inc. Means for making a multi-facet substantially paraboloidal collimator. 3,701,521, Cl. 269-48.000.
Leahy, James B.; and Pierson, Robert B., to Rex Chainbelt Inc. Roller flight conveyor chain. 3,701,413, Cl. 198-183.000.
Lease, Charles A.; Patinkin, Seymour H.; and Chlouper, Frank J., to Atlantic Richfield Company. Composition. 3,701,640, Cl. 44-66.000.
Leduc, Joseph-Adrien M.; Lurie, Charles; Kronig, Walter; and Konrad, Peter, 1/2 to Pullman Incorporated and 1/2 to Farbenfabriken Bayer Aktiengesellschaft. Continuous electrochemical process for reaction of compounds containing aliphatic unsaturation. 3,70,719, Cl. 204-131.000.
Lee, Denis: *See—*
Entwisle, John Hubert; Lee, Denis; and Scrutton, Anthony, 3,701,724.
Lee, Edward William; Tatchell, Keith Reid; Challis, Kenneth John; and Cockerton, Kenneth Archibald, to Ilford Limited. Polyester film with phenoxy resin coating. 3,701,680, Cl. 117-138.80f.
Lee, Geun Sam. Continuous railway transportation system. 3,701,321, Cl. 104-148.0lm.
Lee, Hwalin; Pallos, Perenc M.; and Menn, Juluis J., to Stauffer Chemical Company. Certain geranyl phenyl ethers and their epoxides and their use in controlling insects. 3,701,759, Cl. 260-200.00h.
Lee, Winston F. Z.: *See—*
McMahon, Richard A.; Lee, Winston F. Z.; and Painley, Elmer F., 3,701,277.
Leeds & Northrup Company: *See—*
Cohn, Nathan, 3,701,891.
Leesona Corporation: *See—*
Richter, Hans H., 3,701,245.
Leighton, John S. Misplaced file indicating system. 3,701,987, Cl. 340-280.000.
Leitz, Ernst, G.m.b.H.: *See—*
Katzenfurt, Karl Clos; and Keiner, Fritz, 3,701,307.
Keiner, Heinz, 3,701,594.
Keiner, Heinz; and Schafer, Wilhelm, 3,701,597.
Lemons, David Forrest; Marquart, Gordon Le Roy; and Herscovici, Saul, to Deere & Company. Articulated tractor. 3,701,393, Cl. 180-51.000.
Lenderink & Co., N.V.: *See—*
Van Den Hoven, Wilhelm Elbertus, 3,701,669.
Leningradsky Institut Inzhenerov Zheleznoforpzhnogo Transporta Imeni Akademika N. V. Obraztsova and Kalininsky Vagonostroitelny Zavod: *See—*
Chelnokov, Ivan Ivanovich; Garbuzov, Vladimir Mikhailovich; Koshelev, A. Vladimir; Levit, Georgy Mikhailovich; Maltsev, Albert Alexandrovich; and Myachev, Vladimir Fedorovich, 3,701,402.
Lenk, Erich: *See—*
Schippers, Heinz; Hensen, Friedhelm; and Lenk, Erich, 3,701,512.
Lenschow, Rolf Johan, to Institutt for Atomenergi. Pressure tank for a nuclear reactor. 3,701,227, Cl. 52-224.000.
Leonard, Louis H., Jr., to Carrier Corporation. Absorption refrigeration system. 3,701,265, Cl. 62-475.000.
Lesh, Ed. Sewage disposal systems. 3,701,428, Cl. 210-170.000.
Leslie, Robert J. Injector valve for granular materials. 3,701,479, Cl. 239-407.000.
Levinson, Melvin L. Heating and loading implement for microwave energy. 3,701,872, Cl. 219-10.550.
Levit, Georgy Mikhailovich: *See—*
Chelnokov, Ivan Ivanovich; Garbuzov, Vladimir Mikhailovich; Koshelev, A. Vladimir; Levit, Georgy Mikhailovich; Maltsev, Albert Alexandrovich; and Myachev, Vladimir Fedorovich, 3,701,402.
Lewis, Hubert G. Biaxial optical tool presetter. 3,701,199, Cl. 33-185.00r.
Lewis, Karl R., to Colt Industries Operating Corporation, mesne. Revolver firing mechanism with single action and double action movement. 3,701,213, Cl. 42-65.000.
Lewis, Richard L.; and Goscenski, Edward J., Jr., to Bendix Corporation, The. Hydraulic brake booster with ball valves. 3,701,305, Cl. 91-457.000.
Lewis, Richard L.; Hickner, George B.; and Harokopus, William P., to Bendix Corporation, The. Adaptive braking system utilizing doppler radar. 3,701,568, Cl. 303-21.00p.
Lichfield, Ernest W., to United States of America, Navy, The. Pressure-subtracting hypsometric apparatus. 3,701,283, Cl. 73-401.000.
Liebowitz, Marvin: *See—*
Compa, Russel Edward; and Liebowitz, Marvin, 3,701,202.
Liebscher, Anton: *See—*
Auberry, Horace R.; and Liebscher, Anton, 3,701,273.
Lieckfeldt, Hans: *See—*
Thiele, Heinz; Becker, Dietrich; Hochstein, Roland; Rockstroh, Horst; and Lieckfeldt, Hans, 3,701,309.
Light, Kenneth K.: *See—*
Grossman, James Douglas; and Light, Kenneth K., 3,701,801.
Lignes Telegraphiques et Telephoniques: *See—*
Marotte, Pierre L., 3,701,864.
Lindahl, Charles B.; Schack, Carl J.; and Pilipovich, Donald, to North American Rockwell Corporation. Process improvement in synthesis of oxychlorine trifluoride. 3,701,630, Cl. 23-203.000.
Lindblom, Signe R. Ornament for sleeveless dresses. 3,701,166, Cl. 2-244.000.
Lindsley, Carl Robert: *See—*
McBride, Frank J.; and Lindsley, Carl Robert, 3,701,975.
Lindstol, Anders, to Ecodyme Corporation, mesne. Method and apparatus for filtering a liquid. 3,701,423, Cl. 210-80.000.
Little, Arthur D., Inc.: *See—*
Ashman, Leland E.; and Menashi, Wilson P., 3,701,628.
Bovarnick, Bennett; Eberts, Robert E.; and Nadkarni, Ravindra, 3,701,739.
Little, William T.: *See—*
Labelle, Harold E., Jr.; and Little, William T., 3,701,636.
Litton Industrial Systems, Inc.: *See—*
Mayer, Gerald C.; Vaka, Gregory A.; Zuckermann, Raymond S.; and Jarman, Alonzo B., 3,701,414.
Livesey, Richard Dennis, to Morse, Robert, Corporation, Limited. Electronic controls for alphanumeric printer. 3,701,991, Cl. 346-9.000.
Lock, Joseph H., to Mead Corporation, The. Panel interlocking means and method. 3,701,181, Cl. 24-204.000.
Lockheed Aircraft Corporation: *See—*
Cronin, Michael J., 3,701,964.
Lofguist, Robert Alden: *See—*
Lazarus, Stanley David; and Lofguist, Robert Alden, 3,701,757.
Logan, James Rollin. Elevational positioning and supporting device. 3,701,510, Cl. 254-47.000.
Lonza Ltd.: *See—*
Boosen, Karl-Josef, 3,701,803.
Lovelock, James E., to California Institute of Technology. Vapor phase detectors. 3,701,632, Cl. 23-232.00e.
Lozeau, Paul R.; and Sabonis, Charles J., to Mohawk Data Sciences Corporation. Skew control apparatus for feeding a wide-web ribbon in a high speed printer. 3,701,318, Cl. 101-336.000.
Lubarsky, Andre, Jr., to Telecommunications Technology, Inc. Digital phase lock loop circuit employing oscillator triggered at zero voltage crossing of input signal. 3,701,953, Cl. 328-155.000.
Lubrizol Corporation, The: *See—*
Farone, Eugene Richard, 3,701,754.
Lucian, Arsene N. Liquid-state switching device. 3,701,868, Cl. 200-152.00l.
Luckman, Franklin P., Jr. Component sequencing and taping machine. 3,701,233, Cl. 53-198.000.
Lukens Steel Company: *See—*
Walters, Joseph J.; and McGibbon, Verdun R., 3,701,514.
Lunt, Lawrence Henry Charles: *See—*
Hartley, David; Lunt, Lawrence Henry Charles; and Jack, David, 3,701,808.
Lurie, Charles: *See—*
Leduc, Joseph-Adrien M.; Lurie, Charles; Kronig, Walter; and Konrad, Peter, 3,701,719.
Luwa AG: *See—*
Gasser, Hermann; and Hotz, Hansruedi, 3,701,182.
Lynski, Robert R.: *See—*
Woodrow, James R.; and Lynski, Robert R., 3,701,466.
Ma, Austin C.: *See—*
Marason, Gabriel, Jr.; Ma, Austin C.; and Osborne, Brian G., 3,701,215.
MacKay, Frank A.: *See—*
Taylor, Richard R.; and MacKay, Frank A., 3,702,002.
Macur, Robert Anthony: *See—*
Grubb, Willard T.; and Macur, Robert Anthony, 3,701,687.
Maerker, Gerhard; and Kenney, Harold E., to United States of America, Agriculture. Cyanoethylation of hydroxy compounds. 3,701,802, Cl. 260-404.000.
Magnavox Company, The: *See—*
Richter, Robert H., 3,701,465.
Magnetic Head Corporation: *See—*
Braun, Richard E.; and Hopkins, Lionel G., 3,701,859.
Magosch, Karl-Heinz; Rombusch, Konrad; and Eichers, Ursula, to Chemische Werke Huls, A.G. Antistatic molding compositions. 3,701,765, Cl. 260-93.700.
Maier, Ludwig, to Monsanto Company. Halogenated phosphorus compounds containing the atom skeleton $P-(C-P)_2$ or $P-(C-P)_3$ and preparation. 3,701,817, Cl. 260-932.000.
Maisnik, Hugo J., to Myer Show Print, Inc. Display place-keeper. 3,701,438, Cl. 211-184.000.
Makin, Earle C., Jr.: *See—*
Gebhart, Herbert J., Jr.; and Makin, Earle C., Jr., 3,701,812.
Maldy, Wissous: *See—*
Paris, Jean Denel; Maldy, Wissous; and Santa-Maria, Enrique, 3,701,906.

Malmgren, John Stanley, to Excel Mfg., Ltd. Iron and metal working machinery. 3,701,276, Cl. 72-404.000.

Malter, Lewis: *See—*
Boostrom, Roy E.; Mandell, Arman; and Malter, Lewis, 3,701,603.

Maltsev, Albert Alexandrovich: *See—*
Chelnokov, Ivan Ivanovich; Garbuzov, Vladimir Mikhailovich; Koshelev, A. Vladimir; Levit, Georgy Mikhailovich; Maltsev, Albert Alexandrovich; and Myachev, Vladimir Fedorovich, 3,701,402.

Manara, Angelo Teodoro, to Carlo Tassara S.p.A. Stabilimenti Elettrosiderurgici. Apparatus for the mixing and distribution of granulated materials. 3,701,511, Cl. 259-3.000.

Mandala, Charles G.: *See—*
Paulson, Erland G.; and Mandala, Charles G., 3,701,391.

Mandell, Arman: *See—*
Boostrom, Roy E.; Mandell, Arman; and Malter, Lewis, 3,701,603.

Maness, Dale D., to Esso Research and Engineering Company. Method for the preparation of Faujasite-type zeolites. 3,701,629, Cl. 23-113.000.

Manfredi, Pierre: *See—*
Clement, Rene; Manfredi, Pierre; and Roulliay, Roger, 3,701,444.

Marason, Gabriel, Jr.; Ma, Austin C.; and Osborne, Brian G., to Mattel, Inc. Doll limb joint for selectively allowing free rotation of limb or resisting same. 3,701,215, Cl. 46-163.000.

Marathon Oil Company: *See—*
Ramirez, W. Fred Jr.; and Vestal, Charles R., 3,702,003.

Marine Swimming Pool Equipment Co.: *See—*
Howard, Herbert H., 3,701,427.

Marino, Anthony P.: *See—*
Marino, Frank J.; and Marino, Anthony P., 3,701,559.

Marino, Frank J.; and Marino, Anthony P., to Marino Systems, Inc. Combination sling and unitizing means. 3,701,559, Cl. 294-74.000.

Marino Systems, Inc.: *See—*
Marino, Frank J.; and Marino, Anthony P., 3,701,559.

Markowski, Stanley J., to United Aircraft Corporation. Shortened afterburner construction for turbine engine. 3,701,255, Cl. 60-39.72r.

Marmon Group, Inc., The: *See—*
Crosby, Robert C.; and Holley, John D., 3,701,483.

Marotte, Pierre L., to Lignes Telegraphiques et Telephoniques. Automatic measuring system for a group of telecommunication circuits. 3,701,864, Cl. 179-175.20r.

Marquart, Gordon Le Roy: *See—*
Lemons, David Forrest; Marquart, Gordon Le Roy; and Herscovici, Saul, 3,701,393.

Martens, Gerhard: *See—*
Bauer, Karl; Martens, Gerhard; and Schiminski, Herbert, 3,701,873.

Martin, James. Ejection seat and mechanism therefor. 3,701,502, Cl. 244-122.0ad.

Martin, James. Parachute harness and release mechanism therefor. 3,701,503, Cl. 244-122.0ad.

Martin, Kenneth G.; and Seuferer, Paul A., to Collins Radio Company. Dine and coarse sychro servomotor control including a dual sin/coSine to DC Converter. 3,701,936, Cl. 318-595.000.

Martin, Myron D. Corn popper. 3,701,312, Cl. 99-238.600.

Martins, Samuel J., to Airheat Products, Inc. Fluid and mechanically actuated disc brake system. 3,701,398, Cl. 188-71.800.

Marumo, Nagayuki: *See—*
Mori, Yoichi; Marumo, Nagayuki; Noburu, Fukazawa; and Ohie, Koichi, 3,701,623.

Masch, Helmut E. W., to Fibreboard Corporation. Apparatus and method for erecting a carrier. 3,701,525, Cl. 271-43.00a.

Maska, Rudolf, to National Starch and Chemical Corporation, mesne. Pressure-sensitive adhesives of cyanoacrylate polymers. 3,701,758, Cl. 260-78.50r.

Masson Scott Thrissell Engineering, Ltd.: *See—*
Parker, David George, 3,701,232.

Mathis, Garland V., to Mead Corporation, The. Twin row drop generator. 3,701,998, Cl. 346-75.000.

Matsumoto, Hiroshi: *See—*
Sumoto, Misao; Komagata, Hideki; Matsumoto, Hiroshi; and Furusawa, Hironobu, 3,701,755.

Matsumoto, Jun-Ichi: *See—*
Minami, Shinsaku; Matsumoto, Jun-Ichi; Shimizu, Masanao; and Takase, Yoshiyuki, 3,701,773.

Matsushita Electric Industrial Co., Ltd.: *See—*
Yamamoto, Kozo, 3,701,204.

Matsushita Electric Works, Ltd.: *See—*
Wada, Yukio; and Abura, Yoshinori, 3,701,882.

Matsuzawa, Norio: *See—*
Wada, Shigeru; Oi, Hidesaburo; Matsuzawa, Norio; Nishimura, Hiroshi; and Sasaki, Juntaro, 3,701,763.

Mattel, Inc.: *See—*
Marason, Gabriel, Jr.; Ma, Austin C.; and Osborne, Brian G., 3,701,215.

Matthews, Jennifer V.; and Hamrick, Thomas T., to Garrett Corporation, The. Labyrinth seal. 3,701,536, Cl. 277-56.000.

Matthews, Raymond A. Method of drawing metal tubes. 3,701,270, Cl. 72-57.000.

Mattson, Nils Albert Uno: *See—*
Berglund, Per Henrik Sixten; Fanto-Kurtos, Peter Robert; and Mattson, Nils Albert Uno, 3,701,621.

Matzner, Markus; Noshay, Allen; and Barclay, Robert, Jr., to Union Carbide Corporation. Thermoplastic siloxane-polyester block copolymers. 3,701,815, Cl. 260-824.00r.

Maund, Roderick A. Apparatus for printing on tubular knitted fabric. 3,701,315, Cl. 101-37.000.

Maxon, Glenway, Jr.: *See—*
Wright, William H. B., III, 3,701,692.

Maxwell, John Russell, to Technequip Limited. Method of mineral separation by froth flotation. 3,701,421, Cl. 209-164.000.

May, Charles C. Power actuated hair teasing apparatus with flexible cable drive. 3,701,354, Cl. 132-11.00a.

Mayer, Gerald C.; Vaka, Gregory A.; Zuckermann, Raymond S.; and Jarman, Alonzo B., to Litton Industrial Systems, Inc. Failsafe decelerating system. 3,701,414, Cl. 198-203.000.

Mayse, Weldon D.: *See—*
Cole, Ernest A.; Mayse, Weldon D.; and Watson, Frederick D., 3,701,723.

Mc Gann, Elton Y.: *See—*
Axelson, Carl A.; Hinves, John R.; Mc Gann, Elton Y.; and Johnson, Robert M., 3,701,319.

Mc Larty, Shirley, to Cary Products, Inc. Louver construction. 3,701,311, Cl. 98-110.000.

Mc Namara, Albert C., Jr., to Esquire, Inc. Light reflector system. 3,701,898, Cl. 240-103.00r.

McAuliffe, Gerald K., to North American Rockwell Corporation. System for phase locking on a virtual carrier. 3,701,948, Cl. 325-329.000.

McBride, Frank J.; and Lindsley, Carl Robert. Apparatus for instructing data system machine operators in the encoding of source documents. 3,701,975, Cl. 340-172.500.

McClenahan, William F. Plumbing installation jig. 3,701,172, Cl. 4-252.000.

McConnell, William M.; Bradley, William H.; Chappel, Howard E.; Whitfield, George P.; and Carey, Raymond L., to Taylor-Wilson Manufacturing Company. Pipe coating apparatus. 3,701,336, Cl. 118-423.000.

McDaniel, George H., to Bendix Corporation, The. Time shared position feedback system for numerical control. 3,701,888, Cl. 235-150.100.

McDonnell Douglas Corporation: *See—*
Dervy, Aram J., 3,701,704.

McEachron, John C.: *See—*
Schindler, Edgar C.; and McEachron, John C., 3,701,451.

McGibbon, Verdun R.: *See—*
Walters, Joseph J.; and McGibbon, Verdun R., 3,701,514.

McGillvary, Daniel R., to Firestone Tire & Rubber Company, The. Elastomeric articles free from reinforcing elements. 3,701,374, Cl. 152-330.000.

McGinnis, Herbert E., to Goodrich, B. F., Company, The. Conveyor system. 3,701,411, Cl. 198-109.000.

McGuire, John S. Pipe joint system. 3,701,548, Cl. 285-81.000.

McIntosh, John Robert: *See—*
Cole, Jack; and McIntosh, John Robert, 3,701,223.

McKean, Jack H., to Baychem Corporation. Mobile container decontaminator and recycle metal reclaimer. 3,701,355, Cl. 134-19.000.

McMahon, Richard A.; Lee, Winston F. Z.; and Painley, Elmer F., to Rockwell Manufacturing Company. Fluid flow meter. 3,701,277, Cl. 73-229.000.

McMillin, David C., to Olympia Oyster Company. Oyster setting method and apparatus. 3,701,338, Cl. 119-4.000.

McNeil Corporation: *See—*
Dunning, Franklin W.; and Gorjanc, Henry A., 3,701,442.

McQuistion, William E.; and Tesi, Giorgio, to United States of America, Navy. Warhead. 3,701,573, Cl. 102-57.000.

Mead Corporation, The: *See—*
Gentry, Hermond G., 3,701,230.
Houser, Philip H., 3,701,476.
Lock, Joseph H., 3,701,181.
Mathis, Garland V., 3,701,998.

Mebus, Henry R.: *See—*
Procter, James F.; Mebus, Henry R.; De Young, Robert J.; and Coviello, Joseph, 3,701,176.

Medrad, Inc.: *See—*
Heilman, Marlin S.; Kranys, Rudolph J.; and Jones, Donald, 3,701,345.

Melvin, Mary E.: *See—*
Gilliam, Joe L., 3,701,212.

Menashi, Wilson P.: *See—*
Ashman, Leland E.; and Menashi, Wilson P., 3,701,628.

Mendelson, Myron J.; and England, Alfred W., to Delaware SDS, Inc., mesne. General purpose digital computer. 3,701,977, Cl. 340-172.500.

Menn, Juluis J.: *See—*
Lee, Hwalin; Pallos, Perenc M.; and Menn, Juluis J., 3,701,759.

Mercade, Venancio V., to Engelhard Minerals & Chemicals Corporation. Purification of clay by selective flocculation. 3,701,417, Cl. 209-5.000.

Merck & Co., Inc.: *See—*
Fisher, Michael H., 3,701,780.
Morse, Lewis D.; and Hammes, Paul A., 3,701,668.
Porter, Curt C., 3,701,831.
Porter, Curt C., 3,701,832.

Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Rossler, Hubert; Halpaap, Herbert; and Klatyk, Knut, 3,701,678.

Merhar, Donald M., to Honeywell Inc. Piezoelectric vehicle impact sensor. 3,701,903, Cl. 307-9.000.

Merlin Gerin: *See—*
Amalric, Jean E., 3,701,944.

Merlin Gerin Societe Anonyme: *See—*
Henry, Jean Claude; and Billon, Gerard, 3,701,867.

Merrill, Linus R.: *See—*
Dixson, Richard E.; and Merrill, Linus R., 3,701,375.

Metallgesellschaft AG: *See—*
Schmidt, Hans Joachim; and Voeste, Theodor, 3,701,793.

Mets, Edwin J., to General Electric Company. Process for simultaneously gettering, passivating and locating a junction within a silicon crystal. 3,701,696, Cl. 148-175.000.

Meyer, Leonard; Ashton, Walter G.; and Siegele, James E., to Star Industries, Inc. Front wheel driven floor scrubber. 3,701,177, Cl. 15-50.00r.

Meyer, Max F., Jr.; Combs, Robert L.; and Wooten, Willis C., Jr., to Eastman Kodak Company. Purification of impure scrap poly (ethylene terephthalate). 3,701,741, Cl. 260-2.300.

Meyer, Roth & Pastor: *See—*
Wust, Toni, 3,701,253.

Meyer-Simon, Eugen: *See—*
Kallrath, Gottfried; Knorre, Helmut; Meyer-Simon, Eugen; and Biegler, Hanns, 3,701,675.

Michejda, Oskar, 50% to Koltermann, Jadwiga. Rotary piston engine. 3,701,254, Cl. 60-39.610.

Micro-Bit Corporation: *See—*
Smith, Donald O.; Harte, Kenneth J.; and Cohen, Mitchell S., 3,701,979.

Miller, Avy Lewis. Heating system. 3,701,340, Cl. 122-367.00c.

Miller, Charles Eveleigh; and Schlatter, Gerald Lance, to International Telephone and Telegraph Corporation. Densitomer. 3,701,952, Cl. 328-127.000.

Miller, Ellsworth S.: *See—*
Du Rocher, Gideon A.; and Miller, Ellsworth S., 3,701,965.

Miller, Herbert Edward, to Epsco, Incorporated. Storage and converter system. 3,701,978, Cl. 340-173.00r.

Miller Manufacturing Company: *See—*
Hare, Terence G., 3,701,364.

Miller, Philip Andrew; and Trown, Patrick Willoughby, to American Cyanamid Company. 5,5ab,13,ab-Tetrahydro-5b, 13b-dihydroxy-8h, 16h-7a, 15a-epidithio-7h, 15h-bisoxepino (3',4':4,5) pyrrolo (1,2-a 1'2'-d)-pyrazine-7, using aspergillus terreus. 3,701,774, C. 260-243.00r.

Miller, Richard H., to General Electric Company. Disconnecting switch for force-cooled isolated phase bus. 3,701,866, Cl. 200-144.00b.

Minami, Shinsaku; Matsumoto, Jun-Ichi; Shimizu, Masanao; and Takase, Yoshiyuki, to Dainippon Pharmaceutical Co., Ltd. 5-Nitrofuryl nitrones. 3,701,773, Cl. 260-240.00a.

Minarick, Joseph W.: *See—*
Palma, Michael A.; and Minarick, Joseph W., 3,701,401.

Minigrip, Inc.: *See—*
Laguerre, Leon Ker, 3,701,191.
Laguerre, Leon Ker, 3,701,192.

Minolta Camera Kabushiki Kaisha: *See—*
Kobayashi, Tatsuo; and Ota, Yoshiharu, 3,701,942.

Minowa, Osamu: *See—*
Miyamoto, Hiroshi; Isojima, Tsuyoshi; and Minowa, Osamu, 3,701,317.

Mitsubishi Rayon Co., Ltd.: *See—*
Ashina, Yoshiro; Oshima, Iwao; and Sekine, Kazunori, 3,701,761.

Mitsui Petrochemical Industries, Ltd.: *See—*
Wada, Shigeru; Oi, Hidesaburo; Matsuzawa, Norio; Nishimura, Hiroshi; and Sasaki, Juntaro, 3,701,763.

Miyamoto, Hiroshi; Isojima, Tsuyoshi; and Minowa, Osamu. Method for printing ele ctric circuits on substrates. 3,701,317, Cl. 101-170.000.

Miyano, Shizuo: *See—*
Kondo, Asaji; Fujisaki, Hiroshi; Miyano, Shizuo; and Yazawa, Kenichiro, 3,701,663.

Miyata, Akira; Okubo, Hideyo; Tomita, Chikayoshi; and Suzuki, Akio, to Nippon Kokan Kabushiki Kaisha. Method of after-treatment of metal platings. 3,701,677, Cl. 204-35.00r.

Miyauchi, Sakae; Tanaka, Kazumitsu; and Goto, Nobuo. Electron beam recorder. 3,701,847, Cl. 178-6.70a.

Mizusasa , Susumu: *See—*
Usuda, Shogo; Mizusasa , Susumu; and Tateno, Harunobu, 3,701,857.

Mo och Domsjo Aktiebolag: *See—*
Johansson, Hans Arne Valendier, 3,701,467.
Samuelson, Hans Olof; and Noreus, Goteborg Sture Erik Olof, 3,701,712.

Model, Ernst: *See—*
Pugin, Andre; Burdeska, Kurt; and Model, Ernst, 3,701,791.

Moen, Carl D. Lap supported work tray. 3,701,576, Cl. 312-231.000.

Mohawk Data Sciences Corporation: *See—*
Lozeau, Paul R.; and Sabonis, Charles J., 3,701,318.

Monsanto Company: *See—*
Chupp, John P., 3,701,807.
Gebhart, Herbert J., Jr.; and Makin, Earle C., Jr., 3,701,812.
Maier, Ludwig, 3,701,817.
Smith, Terrill D., 3,701,732.
Smith, Terrill D., 3,701,733.
Weinrich, Bernard W.; and Boyce, David C., 3,701,830.

Moore, Brian Joseph; and Wakinson, Leonard James, to Howson, W. H., Limited. Processing of presensitised photolithographic printing plates. 3,701,657, Cl. 96-35.000.

Moore, Hugh C. Test tube system for separating blood into serum and red cells. 3,701,434, Cl. 210-477.000.

Moore, Lee C., Corporation: *See—*
Woolslayer, Homer J.; Woolslayer, Joseph R.; Jenkins, Cecil; and Campbell, Erwin A., 3,701,435.

Mooring, James F.: *See—*
Janssen, Hermann W.; and Mooring, James F., 3,701,902.

Morales, Juan G.: *See—*
Soloway, Samuel B.; and Morales, Juan G., 3,701,818.

Morawski, London T.; and Parker, John J., said Parker assor. to Parker, John J.; Living Trust, The. Work holder for splined workpieces. 3,701,539, Cl. 279-1.00g.

Mordig, Eberhard: *See—*
Rother, Wolfgang; Mordig, Eberhard; Wenzel, Erwin; Cronert, Dieter; Sand, Karl; Kasbohm, Joachim; Henicke, Heinz; Landmann, Helmut; and Stocker, Winfried, 3,701,881.

Morgan, George W., to Sebsea Equipment Associates Limited, mesne. Multi-conduit riser with a flexible joint. 3,701,551, Cl. 285-137.00r.

Mori, Takakazu: *See—*
Ito, Shin; Kubo, Seitoku; and Mori, Takakazu, 3,701,294.

Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsya, to Nissan Motor Company, Limited. Gear train arrangements. 3,701,293, Cl. 74-759.000.

Mori, Yoichi; Marumo, Nagayuki; Noburu, Fukazawa; and Ohie, Koichi, to Nissan Jidosha Kabushiki Kaisha. Automatic speed change device for vehicles. 3,701,623, Cl. 74-695.000.

Morishima, Yoshio, to Shibata, Ryoji and Shibata, Zenzaburo. Filing implement. 3,701,605, Cl. 402-58.000.

Moriwaki, Shokichi: *See—*
Fujita, Hideo; Ishitobi, Masami; Suga, Hiroyoshi; Ishiwari, Keishiro; Yotsui, Yoshikazu; Yamashita, Tadao; Edamitsu, Masayuki; and Moriwaki, Shokichi, 3,701,720.

Morozumi, Manami: *See—*
Tamura, Kiminori; Morozumi, Manami; Noda, Yutaka; Suzuki, Morio; and Yoshino, Hiroshi, 3,701,772.

Morrison, Edwin A., to Culligan International Company. Water softener valve. 3,701,360, Cl. 137-454.600.

Morrison-Knudsen Company, Inc.: *See—*
Fearon, Joseph G.; and Battermann, George Monte Gilbert, 3,701,320.

Morse, Lewis D.; and Hammes, Paul A., to Merck & Co., Inc. Composition for improving bread making and texture. 3,701,668, Cl. 99-91.000.

Morse, Robert, Corporation, Limited: *See—*
Livesey, Richard Dennis, 3,701,991.

Morton-Norwich Products, Inc., mesne: *See—*
Winitz, Milton, 3,701,666.

Mosley, Sterling; and Jackson, Hosea. Alert-guard. 3,701,986, Cl. 340-279.000.

Moulard, Rene Andre Louis: *See—*
Neale, Michael John; and Gotch, Henry Edward, 3,701,475.

Mozier, Edna G. Restaurant arrangement including dining tables on simulated boats. 3,701,224, Cl. 52-27.000.

Munday, Theodore F.: *See—*
Radimer, Kenneth J.; and Munday, Theodore F., 3,701,825.

Mundy, Joseph L., to General Electric Company. High density four-transistor MOS content addressed memory. 3,701,980, Cl. 340-173.0am.

Murphy, Walter T.; and Japs, Archie B., to Goodrich, B. F., Company, The. Microporous coatings for textile fabrics from cements of polyurethane in dimethylformamide adjusted to pH range 3 to 6. 3,701,681, Cl. 117-161.0kp.

Murray, Robert Maclay, to AMP Domestic, Inc., mesne. Electrical connector. 3,701,966, Cl. 339-95.00r.

Murrell, Thomas A.: *See—*
Jachimek, Thomas P.; and Murrell, Thomas A., 3,701,970.

Myachev, Vladimir Fedorovich: *See—*
Chelnokov, Ivan Ivanovich; Garbuzov, Vladimir Mikhailovich; Koshelev, A. Vladimir; Levit, Georgy Mikhailovich; Maltsev, Albert Alexandrovich; and Myachev, Vladimir Fedorovich, 3,701,402.

Myer Show Print, Inc.: *See—*
Maisnik, Hugo J., 3,701,438.

Nadkarni, Ravindra: *See—*
Bovarnick, Bennett; Eberts, Robert E.; and Nadkarni, Ravindra, 3,701,739.

Nagai, Hiroshi; and Kamimura, Haruo, to Nippon Kokan Kabushiki Kaisha. Method of manufacturing seamless steel pipes. 3,701,272, Cl. 72-97.000.

Nakamura, Akira: *See—*
Arai, Hiroshi; Nakamura, Akira; Okamoto, Atutoshi; and Okumura, Shunji, 3,701,569.

Nakazona, Kiroshi: *See—*
Ueshima, Kumao; Fukada, Kenzo; Yoshinaga, Masakazu; and Nakazona, Kiroshi, 3,701,516.

National Cash Register Company, The: *See—*
Congleton, David B.; Roberts, Donald L.; and Evans, Pat E., 3,701,999.

National Gypsum Company: *See—*
Northsea, George A., 3,701,408.

National Research Development, Corporation: *See—*

Holroyd, John, 3,701,604.
National Starch and Chemical Corporation, mesne: *See*—
Maska, Rudolf, 3,701,758.
Navara, Joseph. Chisel retractor tool. 3,701,348, Cl. 128-20.000.
Neale, Michael John; and Gotch, Henry Edward, to Moulard, Rene Andre Louis. Apparatus for treating human hair. 3,701,475, Cl. 239-11.000.
Neer, Harold M.; and Street, Vern A., to Phillips Petroleum Company. Peak detector and amplifier circuit. 3,701,908, Cl. 307-235.000.
Negra, John S.; and Warshaw, Abe, to Chemical Construction Corporation. Process and catalyst for treating combustion exhaust gas. 3,701,822, Cl. 423-213.000.
Neighbors, Ralph P., to Gulf Research & Development Company. Combating weeds with lower alkyl phenycarbamoyloxythiolcarbanilates. 3,701,646, Cl. 71-100.000.
Nelco Corporation: *See*—
Schindler, Edgar C.; and McEachron, John C., 3,701,451.
Newton, Alwin B., to Borg-Warner Corporation. Controls for multiple-phase ejector refrigeration systems. 3,701,264, Cl. 62-191.000.
Nicklin, Thomas, to Gas Council, The. Alkylation of phenols. 3,701,811, Cl. 260-621.00r.
Nikoden, Joseph, to Detroit Bullet Trap Corporation. Bullet deflection apparatus. 3,701,532, Cl. 273-102.400.
Nilsson, Bruno Yngve, to Boliden Aktiebolag. System for determining electric fields in geophysical prospecting work using synchronized clocks and direct coupled comparison means. 3,701,940, Cl. 324-1.000.
Nilsson, Vilgot Raymond, to Alfa-Laval AB. Centrifuge sludge control and method of operating same. 3,701,469, Cl. 233-20.00a.
Nippon Electric Company, Limited: *See*—
Shimaya, Kazunori; Kaneko, Katsuzo; Fujio, Yoshinori; and Sato, Yoshihiro, 3,701,893.
Nippon Kogaku K. K.: *See*—
Nozawa, Hideyo, 3,701,593.
Nippon Kogaku K.K.: *See*—
Sobajima, Masaru, 3,701,580.
Nippon Kokan Kabushiki Kaisha: *See*—
Iijima, Hiroshi; Terasaka, Masaji; and Tokita, Osamu, 3,701,693.
Miyata, Akira; Okubo, Hideyo; Tomita, Chikayoshi; and Suzuki, Akio, 3,701,677.
Nagai, Hiroshi; and Kamimura, Haruo, 3,701,272.
Osuka, Tatsumi; and Oouchi, Chiaki, 3,701,694.
Nippon Mining Co., Ltd.: *See*—
Asui, Hiroshi; and Takahashi, Mitsuo, 3,701,647.
Nippon Rensui Kabushiki Kaisha: *See*—
Hagiwara, Zenji, 3,701,638.
Nippon Steel Corporation: *See*—
Ueshima, Kumao; Fukada, Kenzo; Yoshinaga, Masakazu; and Nakazona, Kiroshi, 3,701,516.
Nippon Telegraph & Telephone Public Corporation: *See*—
Usuda, Shogo; Mizusasa , Susumu; and Tateno, Harunobu, 3,701,857.
Nippondenso Kabushiki Kaisha: *See*—
Arai, Hiroshi; Nakamura, Akira; Okamoto, Atutoshi; and Okumura, Shunji, 3,701,569.
Nishimura, Hiroshi: *See*—
Wada, Shigeru; Oi, Hidesaburo; Matsuzawa, Norio; Nishimura, Hiroshi; and Sasaki, Juntaro, 3,701,763.
Nissan Jidosha Kabushiki Kaisha: *See*—
Mori, Yoichi; Marumo, Nagayuki; Noburu, Fukazawa; and Ohie, Koichi, 3,701,623.
Nissan Motor Company, Limited: *See*—
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsya, 3,701,293.
Nitto Kagaku Kogyo Kabushiki Kaisha, a/k/a Nitto Chemical Industry Co., Ltd.: *See*—
Ashina, Yoshiro; Oshima, Iwao; and Sekine, Kazunori, 3,701,761.
Noburu, Fukazawa: *See*—
Mori, Yoichi; Marumo, Nagayuki; Noburu, Fukazawa; and Ohie, Koichi, 3,7C ,,623.
Noda, Yutaka: *See*—
Tamura, Kiminori; Morozumi, Manami; Noda, Yutaka; Suzuki, Morio; and Yoshino, Hiroshi, 3,701,772.
Nogami, Sumitaka; Ishigami, Masaki; and Kurita, Jiro, to Asahi Kasei Kogyo Kabushiki Kaisha. Phosphorus-containing polymers and a process for the preparation thereof. 3,701,816, Cl. 260-927.000.
Nolan, Clyde E., Jr., to Brown & Root, Inc. Apparatus for providing off shore installation. 3,701,261, Cl. 61-72.300.
Nordal, Vegard: *See*—
Almen, Torsten H. O.; Haavaldsen, Johan; and Nordal, Vegard, 3,701,771.
Noreus, Goteborg Sture Erik Olof: *See*—
Samuelson, Hans Olof; and Noreus, Goteborg Sture Erik Olof, 3,701,712.
Norris Industries, Inc.: *See*—
Russell, Frank W., 3,701,195.
North American Rockwell Corporation: *See*—
Argue, Gary R.; and Owens, Boone B., 3,701,686.
Ervin, Guy, III, 3,701,685.
Lindahl, Charles B.; Schack, Carl J.; and Pilipovich, Donald, 3,701,630.
McAuliffe, Gerald K., 3,701,948.
Northern Electric Company Limited: *See*—
Eisele, Werner Frank; and Zimmermann, Detlef, 3,701,835.
Spencer, John Gordon, 3,701,955.
Northrop Corporation: *See*—
Goede, Walter F., 3,701,923.
Honzik, Richard A., 3,701,922.
Northsea, George A., to National Gypsum Company. Board handling apparatus. 3,701,408, Cl. 198-32.
Norton Company: *See*—
Wespi, George E., 3,701,220.
Zimmer, William F., Jr.; and Chew, Harvey L., 3,701,703.
Noshay, Allen: *See*—
Matzner, Markus; Noshay, Allen; and Barclay, Robert, Jr., 3,701,815.
Nozawa, Hideyo, to Nippon Kogaku K. K. Safety device for a normal-to-reverse rotation change-over switch in a movie camera. 3,701,593, Cl. 352-91.000.
Nozawa, Shunichi; Kuroi, Hisashi; Hatada, Masamichi; and Fukuyama, Shunsaku, to Blackwell Electronics Ind., Co., Ltd. Instantaneous starting system for discharge lamp. 3,701,925, Cl. 315-101.000.
Nupnau, Arthur E.: *See*—
Thomsen, Jack W.; Nupnau, Arthur E.; Kim, Raymond W. H.; and Cherniavskyj, Jaroslav, 3,701,595.
Nyegaard & Co. A/S: *See*—
Almen, Torsten H. O.; Haavaldsen, Johan; and Nordal, Vegard, 3,701,771.
Obermiller, Herbert C.: *See*—
Anders, Walter G.; and Obermiller, Herbert C., 3,701,497.
O'Connor, James R.: *See*—
Wetzel, Robert D., 3,701,426.
Ogasawara, Yukio: *See*—
Kadono, Yoji; Ogasawara, Yukio; and Kamo, Keizo, 3,701,189.
Ohie, Koichi: *See*—
Mori, Yoichi; Marumo, Nagayuki; Noburu, Fukazawa; and Ohie, Koichi, 3,701,623.
Ohio State University, The: *See*—
Kendall, Lytton A., Jr., 3,701,271.
Ohtsuka, Kunio: *See*—
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsya, 3,701,293.
Oi, Hidesaburo: *See*—
Wada, Shigeru; Oi, Hidesaburo; Matsuzawa, Norio; Nishimura, Hiroshi; and Sasaki, Juntaro, 3,701,763.
Oil Mop Inc.: *See*—
Rhodes, Herbert M., 3,701,258.
Okada, Shigetaka; and Tsuyama, Naoto, to Hayashibara Company. Processes for the production of oligosaccharide having fructose molecules on their reducing ends. 3,701,714, Cl. 195-31.00r.
Okada, Tomio; and Asai, Norio, to Sagami Chemical Research Center. Process for preparing diaminomaleonitrile. 3,701,797, Cl. 260-465.50r.
Okamoto, Atutoshi: *See*—
Arai, Hiroshi; Nakamura, Akira; Okamoto, Atutoshi; and Okumura, Shunji, 3,701,569.
Okamoto, Takeshi. Complementary time indicating mechanism for a clock. 3,701,252, Cl. 58-126.00r.
Okazaki, Nobuo: *See*—
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsya, 3,701,293.
Okubo, Hideyo: *See*—
Miyata, Akira; Okubo, Hideyo; Tomita, Chikayoshi; and Suzuki, Akio, 3,701,677.
Okumura, Shunji: *See*—
Arai, Hiroshi; Nakamura, Akira; Okamoto, Atutoshi; and Okumura, Shunji, 3,701,569.
Olin Corporation: *See*—
Yungbluth, Russell L., 3,701,876.
Olivei, Alfredo: *See*—
Gassino, Teresio; and Olivei, Alfredo, 3,702,001.
Olivetti, Ing. C., & C., S.p.A.: *See*—
Brunialti, Bruno; and Zaffignani, Giovanni, 3,701,841.
Gassino, Teresio; and Olivei, Alfredo, 3,702,001.
Olney, Frederick D., Jr., to Honeywell Information Systems Inc., mesne. Circuit board. 3,701,838, Cl. 174-68.500.
Olney, Frederick Darwin, Jr., to Honeywell Information Systems Inc. Stitch control mechanisms and thread cutter. 3,701,329, Cl. 112-252.000.
Oltman, John E.: *See*—
Dermody, William J.; and Oltman, John E., 3,701,690.
Olympia Oyster Company: *See*—
McMillin, David C., 3,701,338.
Ono, Tsuneyoshi, to Xerox Corporation. Adjustable return mechanism for a watch. 3,701,250, Cl. 58-76.000.
Oouchi, Chiaki: *See*—
Osuka, Tatsumi; and Oouchi, Chiaki, 3,701,694.
O'Reilly, James J.: *See*—
Barkley, John R.; O'Reilly, James J.; and Waring, Robert K., Jr., 3,701,585.
Organon Inc.: *See*—
Van Der Burg, Willem Jacob, 3,701,778.
Ormiston, Peter Thomas, to Solartron Electronic Group Limited, The. Weapon training systems. 3,701,206, Cl. 35-25.000.
Osborne, Brian G.: *See*—
Marason, Gabriel, Jr.; Ma, Austin C.; and Osborne, Brian G., 3,701,215.
Osburn, Albert Ray: *See*—
Pelham, Joseph E.; and Osburn, Albert Ray, 3,701,256.
Oshima, Iwao: *See*—

Ashina, Yoshiro; Oshima, Iwao; and Sekine, Kazunori, 3,701,761.

Osmond, Desmond Wilfred John; Wagstaff, Ian; and Waite, Frederick Andrew, to Imperial Chemical Industries Limited. Process for making a dispersion of polymer particles in an organic liquid. 3,701,747, Cl. 260-33.6.

Osuka, Tatsumi; and Oouchi, Chiaki, to Nippon Kokan Kabushiki Kaisha. Heat treatment method for ferrite pearlite steel. 3,701,694, Cl. 148-12.000.

Ota, Yoshiharu: *See—*
Kobayashi, Tatsuo; and Ota, Yoshiharu, 3,701,942.

Otten, Klaus Detlef: *See—*
Rehn, Karl-Heinz; and Otten, Klaus Detlef, 3,701,247.

Outboard Marine Corporation: *See—*
Lambrecht, Ralph E., 3,701,611.

Overton Corporation: *See—*
Fathauer, George H., 3,701,390.

Overway, Roy E.; and Warrick, Frank G., to Sealed Power Corporation. Machine for forming piston ring spacer-expanders from strip stock. 3,701,275, Cl. 72-335.000.

Owens, Boone B.: *See—*
Argue, Gary R.; and Owens, Boone B., 3,701,686.

Owens-Corning Fiberglas Corporation: *See—*
Stream, Ralph M., 3,701,642.

Owens-Illinois, Inc.: *See—*
Ashby, Carl T.; Berry, James W.; and Deutschman, Archie J., Jr., 3,701,648.
Clark, Robert N., 3,701,658.
Grier, John D., 3,701,184.

Owsley, Herbert B.: *See—*
Bunn, Stuart E.; and Owsley, Herbert B., 3,701,361.

Owsley, Herbert B.; and Bunn, Stuart E. Valve member. 3,701,342, Cl. 123-41.160.

Oxford Industries, Inc.: *See—*
Frost, Wade W., 3,701,328.
Huddleston, Erie George, 3,701,165.

Packaging Corporation of America: *See—*
Boyd, James W.; and Bessett, Clifford H., 3,701,447.

Packaging Industries, Inc.: *See—*
Kovic, Joseph J., 3,701,297.

Page, John T.: *See—*
Von Linsowe, Carl V., 3,701,358.

Page, Josiah B., to International Business Machines Corporation. Method for balancing the utilization of input/output devices. 3,702,006, Cl. 444-1.000.

Painley, Elmer F.: *See—*
McMahon, Richard A.; Lee, Winston F. Z.; and Painley, Elmer F., 3,701,277.

Pall Corporation: *See—*
Krakauer, Sidney; and Rosenberg, David, 3,701,433.

Pallos, Perenc M.: *See—*
Lee, Hwalin; Pallos, Perenc M.; and Menn, Juluis J., 3,701,759.

Palma, Michael A.; and Minarick, Joseph W., to Curtiss-Wright Corporation. Torque overload sensing and indicating device for torque limiting brake mechanism. 3,701,401, Cl. 188-134.000.

Palmer Chemical and Equipment Company, Inc.: *See—*
Palmer, Harold C., 3,701,533.

Palmer, Harold C., to Palmer Chemical and Equipment Company, Inc. Material discharging dart. 3,701,533, Cl. 273-106.50r.

Papee, Denis; and Lavalou, Michel, to Produits Chimiques Pechiney-Saint-Gobain. High porous activated alumina and method. 3,701,718, Cl. 203-141.000.

Paris, Gerard Yvon: *See—*
Swett, Leo Ralph; and Paris, Gerard Yvon, 3,701,785.

Paris, Jean Denel; Maldy, Wissous; and Santa-Maria, Enrique, to Compagnie Generale d'Electricite. Power storage and release device superconductive. 3,701,906, Cl. 370-149.000.

Parker, David George, to Masson Scott Thrissell Engineering, Ltd. Article insertion devices. 3,701,232, Cl. 53-187.000.

Parker, John J.: *See—*
Morawski, London T.; and Parker, John J., 3,701,539.

Parker, John J.; Living Trust, The: *See—*
Morawski, London T.; and Parker, John J. (said Parker assor. to), 3,701,539.

Parker-Hannifin Corporation: *See—*
Brown, Carl A.; and Thomas, Jerald F., 3,701,424.

Parshall, George W.: *See—*
Knoth, Walter H., Jr.; and Parshall, George W., 3,701,804.

Pasquine, Arthur R.; Snow, Harland J.; and Wagner, Edward E. Cigarette perforating apparatus. 3,701,353, Cl. 131-23.00r.

Pate, James Ronald, to International Telephone and Telegraph Corporation. Luminaire for area lighting. 3,701,896, Cl. 240-25.000.

Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH: *See—*
Wiedenmann, Hans, 3,701,921.

Patented Devices (Proprietary) Limited: *See—*
Jenkinson, Frank Edward, 3,701,927.

Patinkin, Seymour H.: *See—*
Lease, Charles A.; Patinkin, Seymour H.; and Chlouper, Frank J., 3,701,640.

Patrick, Charles T., Jr., to Bionetics, Inc. Medical electrode. 3,701,346, Cl. 128-2.06e.

Patterson, Roger Lee; and Ventresca, Mario, to Deere & Company. Land wheel control means. 3,701,385, Cl. 172-386.000.

Paulson, Erland G.; and Mandala, Charles G., to Eldon Industries, Inc. Buoyancy type weighing scale. 3,701,391, Cl. 177-207.000.

Pawsat, Carlton P.; and Humlong, Robert F., to Wald Manufacturing Company. Reflective pedal. 3,701,289, Cl. 74-594.400.

Pawsat, Carlton P.; and Humlong, Robert F. Reflective pedal. 3,701,290, Cl. 74-594.400.

Pelham, Joseph E.; and Osburn, Albert Ray, to Thiokol Chemical Corporation. Demand, solid-propellant gas generator. 3,701,256, Cl. 60-39.470.

Pennington, Davis W.; and Taylor, Ruth N., to Kinetic Lighting. Light fixture with changing light emission. 3,701,897, Cl. 240-78.0cf.

PEPRO, Societe pour le Developpement et la Vente de Specialites Chimiquos: *See—*
Pillon, Daniel; and Trinh, Van Quy, 3,701,776.

Perley, Richmond, to United Aircraft Corporation. Transfer electrostatic printing system. 3,701,996, Cl. 346-74.0es.

Perry, Elmer W. Roof structure with stationary and moveable sheathed sections. 3,701,225, Cl. 52-71.000.

Persson, Mats Olof: *See—*
Andreasson, Per Arvid; and Persson, Mats Olof, 3,701,251.

Pestka, John A.: *See—*
Wornke, Louis J.; and Pestka, John A., 3,701,373.

Pestka, John A.; and Erickson, Lloyd A., to Illinois Tool Works, Inc. Grommet type fastener. 3,701,302, Cl. 85-80.000.

Petersen, Tom Kastrup; and Henriksen, Neils Juul, to Danfoss A/S. Reverse voltage circuit for thyristors. 3,701,939, Cl. 321-45.00r.

Peterson, Adolph A., 111: *See—*
Richardson, Dean E.; Peterson, Adolph A., 111; and Brady, Harold P., Jr., 3,701,742.

Peterson, Earl A. Positive engagement clutch. 3,701,403, Cl. 192-38.000.

Peterson, John B., to Grace, W. R., & Co. Cold storage temperature monitor. 3,701,282, Cl. 73-358.000.

Petro, James: *See—*
Rively, Clair M.; and Petro, James, 3,701,880.

Petrolite Corporation: *See—*
Cole, Ernest A.; Mayse, Weldon D.; and Watson, Frederick D., 3,701,723.

Pettibone Corporation: *See—*
Lado, William J., 3,701,439.

Pfizer Inc.: *See—*
Berg, Rudolph G., 3,701,805.

Phillips, Benjamin, to Universal Electric Company. Bearing structure. 3,701,574, Cl. 308-72.000.

Phillips Fibers Corporation: *See—*
Blore, James H., 3,701,164.

Phillips Petroleum Company: *See—*
Grimes, Monford D.; and Edmonds, James T., Jr., 3,701,665.
Jackson, James C., 3,701,699.
Neer, Harold M.; and Street, Vern A., 3,701,908.

Phipps, Nelson S.: *See—*
Donnelly, James F.; Gee, Wendell P.; and Phipps, Nelson S., 3,701,286.

Photo Corporation of America: *See—*
Davis, Stuart C., 3,701,308.

Piccotti, Enzo, to Ilford Limited. Color photographic process using a bleach-fix solution containing a metal complex of a selenium compound. 3,701,662, Cl. 96-55.000.

Pierce, Chardo, Micronizing Company: *See—*
Pierce, Chardo W., 3,701,670.

Pierce, Chardo W., to Pierce, Chardo, Micronizing Company. Infrared micronizing cooker. 3,701,670, Cl. 99-235.00a.

Pierce, Harold C. Boxed product carloading. 3,701,324, Cl. 105-369.00b.

Pierson, Robert B.: *See—*
Leahy, James B.; and Pierson, Robert B., 3,701,413.

Pilipovich, Donald: *See—*
Lindahl, Charles B.; Schack, Carl J.; and Pilipovich, Donald, 3,701,630.

Piller, Bernhard; and Seitz, Karl, to Ciba-Geigy AG. Process for hardening light-sensitive photographic layers containing gelatine. 3,701,664, Cl. 96-111.000.

Pillon, Daniel; and Trinh, Van Quy, to PEPRO, Societe pour le Developpement et la Vente de Specialites Chimiquos. Sulfones derived from trichlorothiophene. 3,701,776, Cl. 260-247.100.

Pinnolis, Samuel; and Schmidt, Wilhelm E. A., to Western Electric Company, Incorporated. Apparatus for removing an article clamped in a workholder. 3,701,520, Cl. 269-13.000.

Pioneer Electronic Corporation: *See—*
Ando, Shizuo, 3,701,850.
Suzuki, Tsutomu, 3,701,861.

Pittaro, Richard J.: *See—*
Bantz, Walter J.; and Pittaro, Richard J., 3,701,941.

Pittman, Allen G.; and Wasley, William L., to United States of America, Agriculture. Preparation of fluorinated alcohols. 3,701,752, Cl. 260-6.50f.

Pittman, Allen G.; and Wasley, William L., to United States of America, Agriculture. 1,4-Bis-(heptafluoroisopropoxy)-2,3-epoxy-butane. 3,701,792, Cl. 260-348.00r.

Placements Jean Paul Tanguay Ltee, mesne: *See—*
Tanguay, Jean Paul, 3,701,370.

Platt, John Robert; and Rohowetz, Stanley Edward, to American Can Company. Plastic ring pull easy open end. 3,701,453, Cl. 220-54.000.

Plue, Arnold F.; and Katz, Leon, to GAF Corporation. N-(p-aminophenyl) pyrrolidine containing monoazo dyes. 3,701,769, Cl. 260-468.00p.

Plumpe, William H., Jr.; and Weichselbaum, Theodore E., to Sherwood Medical Industries, Inc. Photometric read out and analyzing system. 3,701,601, Cl. 356-96.000.

Polaroid Corporation: *See*—
Erlichman, Irving, 3,701,304.
Rogers, Howard G., 3,701,656.

Pomatti, Renato C., to Texaco Inc. Reinforced polyethylene. 3,701,750, Cl. 260-41.000.

Porat, David: *See*—
Hinden, Milton; and Porat, David, 3,701,878.

Porter, Curt C., to Merck & Co., Inc. Method of inhibiting dopamine β-hydroxylase. 3,701,831, Cl. 424-251.000.

Porter, Curt C., to Merck & Co., Inc. Method of inhibiting dopamine β hydroxylase. 3,701,832, Cl. 424-273.000.

Posner, Edward C.: *See*—
United States of America, National Aeronautics and Space Administration, 3,701,894.

PPG Industries, Inc.: *See*—
Chisholm, Raymond S., 3,701,266.
Frank, Robert G., 3,701,643.
Frank, Robert G., 3,701,644.

Prahacs, Steven; and Bhatia, Satya Pal, to Pulp and Paper Research Institute of Canada. Method of removing odoriferous sulphur compounds from vapours or gas streams. 3,701,824, Cl. 423-225.000.

Pratt, John McDonald; and Whitear, Brian Ronald David, to Imperial Chemical Industries, Limited and Ilford Limited. Photosensitive element containing photolabile cobalt or iron complex and the use thereof in color development. 3,701,660, Cl. 96-48.00r.

Priest, Melvin E., to Deere & Company. Spray type row crop thinner. 3,701,218, Cl. 47-1.430.

Prieur, Lucien Robert: *See*—
Prival, Guy; and Prieur, Lucien Robert, 3,701,858.

Pringle, William L., to Pringle, William L., and Associates, Inc. Fuel tank assembly. 3,701,540, Cl. 280-5.00a.

Pringle, William L., and Associates, Inc.: *See*—
Pringle, William L., 3,701,540.

Prival, Guy; and Prieur, Lucien Robert, to Societe Industrielle Bull-General Electric (Societe Anonyme). Multichannel magnetic head unit of laminated construction. 3,701,858, Cl. 179-100.20c.

Procter & Gamble Company, The: *See*—
Heckert, David C., 3,701,722.

Procter, James F.; Mebus, Henry R.; De Young, Robert J.; and Coviello, Joseph, to Harris-Intertype Corporation. Press to binder transfer system. 3,701,176, Cl. 11-1.00r.

Produits Chimiques Pechiney-Saint-Gobain: *See*—
Papee, Denis; and Lavalou, Michel, 3,701,718.

Prontor Werk Gauthier, Alfred, GmbH: *See*—
Dietz, Ernst Hermann, 3,701,310.

Proulx, George G., to Honeywell Inc. Electropneumatically controlled servo for tape mechanism. 3,701,494, Cl. 242-184.000.

Pugin, Andre; Burdeska, Kurt; and Model, Ernst, to Ciba-Geigy AG. Salicyloylamino-anthraquinone pigments. 3,701,791, Cl. 260-377.000.

Pullman Incorporated: *See*—
Carr, George W., 3,701,562.
Leduc, Joseph-Adrien M.; Lurie, Charles; Kronig, Walter; and Konrad, Peter, 3,701,719.

Pulp and Paper Research Institute of Canada: *See*—
Prahacs, Steven; and Bhatia, Satya Pal, 3,701,824.

Pultizer, Wolfgang: *See*—
Karobath, Ernst; and Pultizer, Wolfgang, 3,701,689.

Puyo, Andre; and Habib, Pierre Andre, to Coyne et Bellier, Bureau d'Ingenieurs Conseils, mesne. Reinforcing and prestressing cable. 3,701,554, Cl. 287-78.000.

Puzik, Otto V., to Willow Hill Industries, Inc. Vehicle axle spindle. 3,701,564, Cl. 301-131.000.

Quesnel, Guy; and Feugere, Francis. Rotatable drum device. 3,701,487, Cl. 241-178.000.

Radco Manufacturing Co., Inc.: *See*—
Adams, Harvey Keith, 3,701,436.

Radimer, Kenneth J.; and Munday, Theodore F., to FMC Corporation. Stabilization of hydrogen perioxide with ethylenediamine tetra (methylenephosphonic acid). 3,701,825, Cl. 423-273.0on.

Raffaelli, Milo L., Sr.: *See*—
Scholl, Carl W.; and Raffaelli, Milo L., Sr., 3,701,707.

Ragland, Frank Rowland, Jr., to RCA Corporation. Method of assembling and mounting an aperture mask in a mask-panel assembly of a cathode-ray tube using a full surface spacer. 3,701,193, Cl. 29-25.150.

Rakow, Marvin S.; and Konig, Robert J., to Cities Service Oil Company. Stabilized distillate hydrocarbon fuel oil compositions and additives therefor. 3,701,641, Cl. 44-73.000.

Ramirez, W. Fred Jr.; and Vestal, Charles R., to Marathon Oil Company. Algorithm to minimize iterative computation in a process for the analysis or design of a physical system. 3,702,003, Cl. 444-1.000.

Ramos-Rodriguez, Emiliano, to Commonwealth of Puerto Rico. for jointly producing furfural and levulinic acid from bagasse and other lignocellulosic materials. 3,701,789, Cl. 260-347.900.

Ramqvist, Lars Henry: *See*—
Svanstrom, Elis Kjell Ake; and Ramqvist, Lars Henry, 3,701,649.

Randolph, Arthur J., to Tuftamatic, Inc. Quilt and cushion construction and button therefor. 3,701,174, Cl. 5-356.000.

Rauhut, Michael McKay: *See*—
Roberts, Bernard George; and Rauhut, Michael McKay, 3,701,738.

Rausch, John J.; and Van Thyne, Ray J., to Surface Technology Corporation. Columbium base alloy. 3,701,655, Cl. 75-174.000.

Ray, Elbert L.: *See*—
Brown, Barry M.; and Ray, Elbert L., 3,701,431.

Ray, Robert A.: *See*—
Deuringer, Rudolf; Ray, Robert A.; and Sternberg, James C., 3,701,716.

RCA Corporation: *See*—
Burns, Joseph Richard, 3,701,984.
Cochran, Larry Allen, 3,701,844.
Kimbrough, Laurence B., 3,701,674.
Kirkwood, Loren Robert; Cochran, Larry Allen; and Altmanshofer, Robert Dale, 3,701,842.
Ragland, Frank Rowland, Jr., 3,701,193.
Stark, John, Jr.; and Carpenter, David Harry, 3,701,845.
Stern, Herman Abraham, 3,701,368.
Van Renssen, Marinus, 3,701,185.

Readio, Philip D.: *See*—
Schramm, Charles H.; Schrage, Albert; and Readio, Philip D., 3,701,751.

Readus, La Verne: *See*—
Woods, Virgle L.; and Readus, La Verne, 3,701,504.

Rederiakliebolaget Nordstjernan: *See*—
Svanstrom, Elis Kjell Ake; and Ramqvist, Lars Henry, 3,701,649.

Reese, Anthony L., to Dresser Industries, Inc. Position indicating butterfly valve. 3,701,362, Cl. 137-556.300.

Reeves, Wilson A.: *See*—
Ellzey, Samuel E., Jr.; Connick, William J., Jr.; Reeves, Wilson A.; and Drake, George L., Jr., 3,701,626.

Regh, Joseph: *See*—
Doo, Ven Y.; Regh, Joseph; and Seto, David K., 3,701,659.

Rehn, Karl-Heinz; and Otten, Klaus Detlef, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Automatic switch-off assembly for feed spools in textile. 3,701,247, Cl. 57-81.000.

Reichmann, Horst; and Rottmann, Gernot, to Vaillant, Joh, KG. Burner plate, in particular for forced-draft oilgas or gas burners. 3,701,481, Cl. 239-553.500.

Reitz, Gertrud: *See*—
Reitz, Reinhard, 3,701,570.

Reitz, Reinhard; deceased (by Reitz, Gertrud; legal representative), to Knorr-Bremse GmbH. Single release air brake for railroad vehicles. 3,701,570, Cl. 303-70.000.

Renz, John F.: *See*—
Holmes, Walter V.; and Renz, John F., 3,701,909.

Revitz, Martin; and Thompson, James M., to International Business Machines Corporation. Gold tantalum-nitrogen high conductivity metallurgy. 3,701,931, Cl. 317-234.00r.

Rex Chainbelt Inc.: *See*—
Leahy, James B.; and Pierson, Robert B., 3,701,413.

Reynolds, Howard Lloyd, to Bell TElephone Laboratories, Incorporated. First idle line pickup service. 3,701,855, Cl. 179-18.0es.

Rhodes, Herbert M., to Oil Mop Inc. Buoyant pulley locating and anchoring device for an oil mop. 3,701,258, Cl. 61-1.00f.

Richardson Company, The: *See*—
Testolin, Reno J., 3,701,222.

Richardson, Dean E.; Peterson, Adolph A., 111; and Brady, Harold P., Jr., to Union Carbide Corporation. Vinyl chloride polymers and method of preparing same. 3,701,742, Cl. 260-17.00r.

Richardson, Edwin A.; and Barnes, Herbert W., to Shell Oil Company. Fracture propping. 3,701,383, Cl. 166-281.000.

Richardson, Hugh H., to General Electric Company. Method and apparatus for making electrical connections. 3,701,877, Cl. 219-97.000.

Richmond, Abraham W., to Aeroquip Corporation. Control system for diesel locomotive. 3,701,556, Cl. 290-40.00b.

Richmond, Ernest L.: *See*—
Beroff, Howard; and Richmond, Ernest L., 3,701,725.

Richter, Hans H., to Leesona Corporation. Friction twisting unit. 3,701,245, Cl. 57-34.00r.

Richter, Robert H., to Magnavox Company, The. Packaging structure. 3,701,465, Cl. 229-14.00c.

Richter, Robert K.; and Shkredka, Jurek, to Kaiser Aluminum & Chemical Corporation. Cladding mold system. 3,701,380, Cl. 164-334.000.

Ricke, Hans-Benno: *See*—
Bader, Erich; Kannenberg, Karl G.; and Ricke, Hans-Benno, 3,701,676.

Rieter Machine Works, Ltd.: *See*—
Wust, Olivier, 3,701,492.

Riggs & Lambard Inc.: *See*—
Wilcox, Harold R., 3,701,269.

Riley, Howard B. Needle. 3,701,462, Cl. 223-102.000.

Ringkamp, Joseph B. Fluid dispensing device. 3,701,575, Cl. 312-45.000.

Risk, Jerry, to Kuhlman Corporation. Internal fuse for transformer. 3,701,926, Cl. 317-15.000.

Rively, Clair M.; and Petro, James, to Westinghouse Electric Corporation. Method for sculpturing an indicia or decorative design in the

surface of an article with a beam of corpuscular energy. 3,701,880, Cl. 219t121.0eb.

Ro-Search Incorporated: *See*—
Auberry, Horace R.; and Liebscher, Anton, 3,701,273.

Roberts, Bernard George; and Rauhut, Michael McKay. Chemiluminescent improvements. 3,701,738, Cl. 252-188.300.

Roberts, Donald L.: *See*—
Congleton, David B.; Roberts, Donald L.; and Evans, Pat E., 3,701,999.

Robertson, H. H., Company: *See*—
Fork, Frank W., 3,701,837.

Rockstroh, Horst: *See*—
Thiele, Heinz; Becker, Dietrich; Hochstein, Roland; Rockstroh, Horst; and Lieckfeldt, Hans, 3,701,309.

Rockwell Manufacturing Company: *See*—
McMahon, Richard A.; Lee, Winston F. Z.; and Painley, Elmer F., 3,701,277.

Roesch, Christian, to Sutton Engineering Company. Roller leveler with adjustable flattening section. 3,701,274, Cl. 72-165.000.

Rogers, Howard G., to Polaroid Corporation. Photographic products and processes for color diffusion transfer. 3,701,656, Cl. 96-300.000.

Rohm & Haas Company: *See*—
Kroekel, Charles Henry, 3,701,748.

Rohm and Haas Company: *See*—
Seidel, Michael C.; Von Meyer, William C.; and Greenfield, Stanley A., 3,701,784.

Rohowetz, Stanley Edward: *See*—
Platt, John Robert; and Rohowetz, Stanley Edward, 3,701,453.

Rombusch, Konrad: *See*—
Magosch, Karl-Heinz; Rombusch, Konrad; and Eichers, Ursula, 3,701,765.

Romero, Roderic: *See*—
Eisenlohr, Dieter Moritz; and Romero, Roderic, 3,701,863.

Rose, James E.: *See*—
Zimmer-Galler, Roswitha; and Rose, James E., 3,701,697.

Rose, James S.: *See*—
Carleton, Peter S.; Farrissey, William J., Jr.; and Rose, James S., 3,701,756.

Rosenberg, David: *See*—
Krakauer, Sidney; and Rosenberg, David, 3,701,433.

Rossler, Hubert; Halpaap, Herbert; and Klatyk, Knut, to Merck Patent Gesellschaft mit beschrankter Haftung. Film for layer chromatography. 3,701,678, Cl. 117-69.000.

Rossman, Joseph J.; and Hudgins, Wilbur E. Split transfer sleeve. 3,701,537, Cl. 279-1.00a.

Rother, Wolfgang; Mordig, Eberhard; Wenzel, Erwin; Cronert, Dieter; Sand, Karl; Kasbohm, Joachim; Henicke, Heinz; Landmann, Helmut; and Stocker, Winfried, to Veb Kombinat Luft-und Kaltetechnik. Method and apparatus for welding metal sheets. 3,701,881, Cl. 19-123.000.

Rotsky, Bernard A.; and Dunne, Gilbert M., Jr., to Gourdine Systems, Inc. Modularized electrostatic precipitator. 3,701,236, Cl. 55-114.000.

Rottmann, Gernot: *See*—
Reichmann, Horst; and Rottmann, Gernot, 3,701,481.

Roulliay, Roger: *See*—
Clement, Rene; Manfredi, Pierre; and Roulliay, Roger, 3,701,444.

Routson, Willis G.; and Caldwell, Albert L., to Dow Chemical Company, The. Method and composition for controlling flow through subterranean formations. 3,701,384, Cl. 166-292.000.

Roys, George P.: *See*—
Askins, Robert E.; and Roys, George P., 3,701,278.

Rubinstein, Harvey: *See*—
Franklin, Dennis M.; Hornreich, Richard M.; and Rubinstein, Harvey, 3,701,983.

Rubio, Alfred M., to Columbia Broadcasting System, Inc. Kettledrum and tuning mechanism therefor. 3,701,834, Cl. 84-419.000.

Rudolff, Hermann: *See*—
Freudeberg, Jurgen; and Rudolff, Hermann, 3,701,982.

Ruff, David L.; and Siddiqui, Nadeem U., to Grefco, Inc. Bituminous fibrous building product and method of preparing same. 3,701,672, Cl. 106-282.000.

Rumpoldin, Ernst: *See*—
Trebitz, Doris; and Rumpoldin, Ernst, 3,701,588.

Runge, Peter Klaus, to Bell Telephone Laboratories, Incorporated. Tuned voltage variable birefringent acousto-optical filter. 3,701,584, Cl. 350-149.000.

Rushton, Brian M.: *See*—
French, William H.; and Rushton, Brian M., 3,701,767.

Ruska Instrument Corporation: *See*—
Worden, Raymond D., 3,701,634.

Russell, Frank W., to Norris Industries, Inc. Method of keying a padlock. 3,701,195, Cl. 29-434.000.

Russell, Lewis Keith, to Signetics Corporation. Learning circuit. 3,701,974, Cl. 340-172.500.

Ryan, Jerry E. Method for simulating the reduction of gravity. 3,701,528, Cl. 272-6.000.

Saaty, Nabil Najib; and Jacobs, Richard Lee, to Upjohn Company, The. Storage stable methylenebis (phenyl isocyanate) compositions. 3,701,796, Cl. 260-453.0sp.

Sabbah, Benjamin: *See*—
Suhami, Albert; Sabbah, Benjamin; Inbar, Dan; Yarom, Artzi; and Ben-Zeev, Dan, 3,701,901.

Sabonis, Charles J.: *See*—
Lozeau, Paul R.; and Sabonis, Charles J., 3,701,318.

Sachnik, Norman H. Foam generating nozzle. 3,701,482, Cl. 239-590.300.

Sagami Chemical Research Center: *See*—
Okada, Tomio; and Asai, Norio, 3,701,797.

Saito, Kazuhisa: *See*—
Yoshida, Masatoshi; Saji, Yasuo; Saito, Kazuhisa; and Ikegami, Shigeru, 3,701,819.

Saji, Yasuo: *See*—
Yoshida, Masatoshi; Saji, Yasuo; Saito, Kazuhisa; and Ikegami, Shigeru, 3,701,819.

Sakamoto, Tsuneo, to Kyoikushuppan Co., Ltd. Flexible, soft, foam resin assembling process. 3,701,214, Cl. 46-25.000.

Samuelson, Hans Olof; and Noreus, Goteborg Sture Erik Olof, to Mo och Domsjo Aktiebolag. Process for treating cellulosic materials with alkali and oxygen in the presence of complex magnesium salts. 3,701,712, Cl. 162-65.000.

Sand, Karl: *See*—
Rother, Wolfgang; Mordig, Eberhard; Wenzel, Erwin; Cronert, Dieter; Sand, Karl; Kasbohm, Joachim; Henicke, Heinz; Landmann, Helmut; and Stocker, Winfried, 3,701,881.

Sanjo, Sadao; Yamada Hiroshi; and Gono, Yoshio. Textile-forwarding units with pressure rollers operable jointly and individually. 3,701,608, Cl. 226-155.000.

Sanner, Gary L.; and Hebeler, Charles B., to Burroughs Corporation. Terminal message monitor. 3,701,971, Cl. 340-172.500.

Santa-Maria, Enrique: *See*—
Paris, Jean Denel; Maldy, Wissous; and Santa-Maria, Enrique, 3,701,906.

Santala, Teuvo J.; and Hirsbrunner, Hans G., to Texas Instruments, Incorporated. Silver-base alloy for making electrical contracts. 3,701,654, Cl. 75-173.000.

Saporiti, Elio: *See*—
Tirelli, Paolo; and Saporiti, Elio, 3,701,366.

Sasaki, Juntaro: *See*—
Wada, Shigeru; Oi, Hidesaburo; Matsuzawa, Norio; Nishimura, Hiroshi; and Sasaki, Juntaro, 3,701,763.

Sassmannshausen, Guenter; and Lahme, Norbert, to Accumulatorenwerk Hoppecke Carl Zoellner & Sohn KG. Appliance for the catalytic reconstitution of hydrogen and oxygen gases generated by electric accumulators into water. 3,701,691, Cl. 136-179.000.

Satake, Toshihiko. Husker seperator. 3,701,420, Cl. 209-135.000.

Sato, Takayoshi, kabushikikaisha COPAL. Compensating circuit for voltage and temperature in a transistor circuit. 3,701,910, Cl. 307-255.000.

Sato, Yoshihiro: *See*—
Shimaya, Kazunori; Kaneko, Katsuzo; Fujio, Yoshinori; and Sato, Yoshihiro, 3,701,893.

Sauer, Heinrich: *See*—
Kuhner, Gerhard; Sauer, Heinrich; Jager, Gerhard; and Dusing, Gerhard, 3,701,480.

Sawada, Koshichi: *See*—
Heki, Takao; Yasumatsu, Katsuharu; Sawada, Koshichi; and Funakoshi, Yoshiro, 3,701,667.

Sayers, George M.: *See*—
Walls, Henry M.; Sayers, George M.; and Walls, Noel B., 3,701,344.

Sayigh, Adnan A. R.; and Ulrich, Henri, to Upjohn Company, The. 4-Azidosulfonyl phthalic anhydride. 3,701,788, Cl. 260-346.300.

Scelze, Robert G. Airport design. 3,701,501, Cl. 244-114.00r.

Schack, Carl J.: *See*—
Lindahl, Charles B.; Schack, Carl J.; and Pilipovich, Donald, 3,701,630.

Schafer, Hans, to Siemens Aktiengesellschaft. Apparatus for inductive longitudinal or helical seam welding of tubular metallic workpieces. 3,701,871, Cl. 219-8.200.

Schafer, James A.: *See*—
Welsch, Bernhard J.; and Schafer, James A., 3,701,493.

Schafer, Wilhelm: *See*—
Keiner, Heinz; and Schafer, Wilhelm, 3,701,597.

Schanck, James L., to Babcock & Wilcox Company, The. Stainless steel. 3,701,653, Cl. 75-124.000.

Schell, Orville Carroll, to Hoyt Corporation. Skimmer for removing floating matter from a body of liquid. 3,701,429, Cl. 210-242.000.

Schichman, Daniel; and Hong, Sung Whee, to Uniroyal, Inc. Method of free curing rubber. 3,701,702, Cl. 156-244.000.

Schiminski, Herbert: *See*—
Bauer, Karl; Martens, Gerhard; and Schiminski, Herbert, 3,701,873.

Schindler, Edgar C.; and McEachron, John C., to Nelco Corporation. Molded electrical junction box. 3,701,451, Cl. 220-27.000.

Schippers, Heinz: *See*—
Treptow, Heinz; Frank, Benno; and Schippers, Heinz, 3,701,268.

Schippers, Heinz; Hensen, Friedhelm; and Lenk, Erich, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Screw extruder for processing thermoplastic materials. 3,701,512, Cl. 259-191.000.

Schlafhorst, W., & Co.: *See*—
Furst, Stefan, 3,701,267.

Schlatter, Gerald Lance: *See*—
Miller, Charles Eveleigh; and Schlatter, Gerald Lance, 3,701,952.

Schlegel, William L., to Komline-Sanderson Engineering Corporation. Articulated connector. 3,701,432, Cl. 210-401.000.

Schmidt, Erich A.: *See*—
Schmidt, Volker; and Schmidt, Erich A., 3,701,300.

Schmidt, Gerald W.: *See—*
Smith, Jay, III; Schmidt, Gerald W.; and Jones, Lawrence T., 3,701,216.

Schmidt, Hans Joachim; and Voeste, Theodor, to Metallgesellschaft AG. Method of carrying out liquid gas reactions. 3,701,793, Cl. 260-409.000.

Schmidt, Robert Benjamin; Smith, George Wallace, Jr.; and Walford, Robert Bernard, to Bell Telephone Laboratories, Incorporated. Information retrieval strategy. 3,702,010, Cl. 444-1:000.

Schmidt, Volker; and Schmidt, Erich A. Material cutting apparatus having a selector. 3,701,300, Cl. 83-80.000.

Schmidt, Wilhelm E. A.: *See—*
Pinnolis, Samuel; and Schmidt, Wilhelm E. A., 3,701,520.

Schneider, Peter R.: *See—*
Carter, William C.; and Schneider, Peter R., 3,701,892.

Schnellpressenfabrik Koenig and Bauer Aktiengesellschaft: *See—*
Von, Angerer Roland; and Gillig, Witmar, 3,701,183.

Schoefer, Peter B.: *See—*
Berkman, Richard M.; and Schoefer, Peter B., 3,701,620.

Schoeller, Alexander. Short bottle crates made of plastic. 3,701,449, Cl. 220-21.000.

Schofield, John A.: *See—*
Donninger, Cyril; Schofield, John A.; and Hawes, John E., 3,701,779.

Scholl, Carl W.; and Raffaelli, Milo L., Sr., to Scholl, Inc. Apparatus for making heat-sealed articles. 3,701,707, Cl. 156-380.000.

Scholl, Inc.: *See—*
Scholl, Carl W.; and Raffaelli, Milo L., Sr., 3,701,707.

Schouten, Gerrit Hilbertus; Bohlmeijer, Nicolaas; Van Der Steeg, Hendrik; and Van der Maarel, Marinus Cornelis, to U.S. Philips Corporation. Three-dimensional storage device comprising magnetic memory elements. 3,701,981, Cl. 340-174.0ac.

Schrage, Albert: *See—*
Schramm, Charles H.; Schrage, Albert; and Readio, Philip D., 3,701,751.

Schramm, Charles H.; Schrage, Albert; and Readio, Philip D., to Dart Industries, Inc. Fiber reinforced modified polyolefin compositions. 3,701,751, Cl. 260-41.00a.

Schubert, Dale W.; and Ezekiel, Frederick D., to Wright, Barry, Corporation. Active fluid isolation system. 3,701,499, Cl. 244-17.270.

Schuler, Manfred; and Yamamoto, Tatsumi. Scuba valve. 3,701,363, Cl. 137-599.000.

Schultz, William H.: *See—*
Gronke, Ronald E.; and Schultz, William H., 3,701,369.

Schulz, Horst, to Fichtel & Sachs AG. Multiple speed hub with automatic gear change and manual override. 3,701,292, Cl. 74-752.00e.

Schulze, Gerhard. Fan motor bearing assembly. 3,701,912, Cl. 310-90.000.

Schwerdhoefer, Hans Joachim, to Fichtel & Sachs AG. Gear shifting mechanism for a bicycle transmission. 3,701,333, Cl. 116-124.00r.

Schwerdhofer, Hans Joachim; and Wolf, Gerhard Max, to Fichtel & Sachs AG. Bicycle and gear shifting arrangement for the same. 3,701,546, Cl. 280-289.000.

Science Spectrum Inc.: *See—*
Berkman, Richard M.; and Schoefer, Peter B., 3,701,620.

Scott, Henry H. Crop culture with 1h-1,2,4-triazoles. 3,701,645, Cl. 71-1.000.

Scrutton, Anthony: *See—*
Entwisle, John Hubert; Lee, Denis; and Scrutton, Anthony, 3,701,724.

Scrutton, Simon Lindsay: *See—*
Hercock, Robert James; and Scrutton, Simon Lindsay, 3,701,731.

Sealed Power Corporation: *See—*
Overway, Roy E.; and Warrick, Frank G., 3,701,275.

Sebsea Equipment Associates Limited, mesne: *See—*
Morgan, George W., 3,701,551.

Seco-Dyn, Inc.: *See—*
Stewart, William K., 3,701,599.

Seeburg Corporation of Delaware, The: *See—*
Jachimek, Thomas P.; and Murrell, Thomas A., 3,701,970.

Segawa, Masahiro; and Kawakami, Yukichika, to Kureha Kagaku Kogyo Kabushiki Kaisha. Polyvinylidene fluoride flavanthron composition. 3,701,749, Cl. 260-41.00c.

Seidel, Harold, to Bell Telephone Laboratories, Incorporated. Narrowband filter. 3,701,950, Cl. 325-470.000.

Seidel, Michael C.; Von Meyer, William C.; and Greenfield, Stanley A., to Rohm and Haas Company. 1,2,4-4h-Triazole derivatives. 3,701,784, Cl. 260-308.00r.

Seismograph Service Corporation: *See—*
Broding, Robert A., 3,701,968.

Seitz, Karl: *See—*
Piller, Bernhard; and Seitz, Karl, 3,701,664.

Sekine, Kazunori: *See—*
Ashina, Yoshiro; Oshima, Iwao; and Sekine, Kazunori, 3,701,761.

Seminatore, Albert F., to United States of America, Navy. Adjustable pulse train generator. 3,701,954, Cl. 328-59.000.

Seto, David K.: *See—*
Doo, Ven Y.; Regh, Joseph; and Seto, David K., 3,701,659.

Settlage, Paul Herman; and Thornton, Roger Lea, to Du Pont de Nemours, E. I., and Company. Process for preparing a coating composition of copolymeric vinylidene chloride. 3,701,745, Cl. 260-28.50r.

Seuferer, Paul A.: *See—*
Martin, Kenneth G.; and Seuferer, Paul A., 3,701,936.

Sevy, William R.: *See—*
Johnson, William R.; Sevy, William R.; Weigel, James E.; and Taller, Robert A., 3,701,746.

Shaw, Harvey P., to General Electric Company. Solutions of room temperature vulcanizable silicone rubber compositions. 3,701,753, Cl. 260-9.00r.

Shell Oil Company: *See—*
Donninger, Cyril; Schofield, John A.; and Hawes, John E., 3,701,779.
Holler, Howard V., 3,701,762.
Richardson, Edwin A.; and Barnes, Herbert W., 3,701,383.
Soloway, Samuel B.; and Morales, Juan G., 3,701,818.
Van Der Zeeuw, Abraham J., 3,701,650.

Shelley Manufacturing Company: *See—*
House, Bruce F., 3,701,396.

Sherwood Medical Industries, Inc.: *See—*
Plumpe, William H., Jr.; and Weichselbaum, Theodore E., 3,701,601.

Shibata, Ryoji: *See—*
Morishima, Yoshio, 3,701,605.

Shibata, Zenzaburo: *See—*
Morishima, Yoshio, 3,701,605.

Shields, Walter A. Conveying vials in a straight path. 3,701,410, Cl. 198-106.000.

Shilling, Wilbur L., to Crown Zellerbach Corporation. Process of alkylation with base of metal oxide. 3,701,814, Cl. 260-475.0sc.

Shimaya, Kazunori; Kaneko, Katsuzo; Fujio, Yoshinori; and Sato, Yoshihiro, to Nippon Electric Company, Limited. Data converter for a computer system. 3,701,893, Cl. 235-154.000.

Shimizu, Masanao: *See—*
Minami, Shinsaku; Matsumoto, Jun-Ichi; Shimizu, Masanao; and Takase, Yoshiyuki, 3,701,773.

Shirane, Yasuhior; and Yamada, Junzo, to Sumitomo Metal Industries, Limited. Roll dampening. 3,701,397, Cl. 188-33.000.

Shirou, Mende, to Kabushiki Kaisha Nakamura Seisakusho. Torque wrench. 3,701,295, Cl. 81-52.400.

Shively, Richard Robert, to Bell Telephone Laboratories, Incorporated. Floating point arithmetic unit for a parallel processing computer. 3,701,976, Cl. 340-172.500.

Shkredka, Jurek: *See—*
Richter, Robert K.; and Shkredka, Jurek, 3,701,380.

Shneider, Harold M.; and Bower, Robert G., to Honeywell Inc. Modularized card reader. 3,701,524, Cl. 271-10.000.

Shutt, Paul B.; and Barnes, Charles M., to Bendix Corporation, The. Combination proportioning and bypass valve. 3,701,567, Cl. 303-6.00c.

Siddall, John B.: *See—*
Zurfluh, Rene C.; and Siddall, John B., 3,701,800.

Siddiqui, Nadeem U.: *See—*
Ruff, David L.; and Siddiqui, Nadeem U., 3,701,672.

Sieber, Johannes Helmut, to Bowe, Bohler & Weber KG Maschinenfabrik. Process for the chemical treatment of textile goods. 3,701,625, Cl. 8-94.000.

Siegele, James E.: *See—*
Meyer, Leonard; Ashton, Walter G.; and Siegele, James E., 3,701,177.

Siemens Aktiengesellschaft: *See—*
Schafer, Hans, 3,701,871.

Signetics Corporation: *See—*
Russell, Lewis Keith, 3,701,974.

Simmons, William W., to TRW Inc. Method of an apparatus for generating ultra-short time-duration laser pulses. 3,701,956, Cl. 331-94.500.

Simpkins, Frederick W., to Alden Research Foundation. Facsimile recorder and moving electrode therefor. 3,701,997, Cl. 346-74.00e.

Sinar AG Schaffhausen: *See—*
Koch, Carl, 3,701,582.

SKF Industrial Trading and Development Company NV: *See—*
Hallerback, Stig Lennart, 3,701,911.

Skil Corporation: *See—*
Gronke, Ronald E.; and Schultz, William H., 3,701,369.

Sluijter, Robert Joahnnes; and Van Gerwen, Petrus Josephus, to U.S. Philips Corporation. Transmission system and associated transmitters and receivers for the transmission of synchronous pulse signals. 3,701,852, Cl. 179-15.0fs.

Sluijters, Robert: *See—*
Appeldoorn, Jacques W. J.; and Sluijters, Robert, 3,701,619.

Smith, Donald J., to Smith-Schreyer & Assoc., Inc. Shield connector for multi-strand shielded cables. 3,701,839, Cl. 174-78.000.

Smith, Donald O.; Harte, Kenneth J.; and Cohen, Mitchell S., to Micro-Bit Corporation. Slow write-fast read memory method and system. 3,701,979, Cl. 340-173.00r.

Smith, George E. Temporary vehicle markings. 3,701,210, Cl. 40-129.00c.

Smith, George Elwood: *See—*
Amelio, Gilbert Frank; and Smith, George Elwood, 3,701,914.

Smith, George Wallace, Jr.: *See—*
Schmidt, Robert Benjamin; Smith, George Wallace, Jr.; and Walford, Robert Bernard, 3,702,010.

Smith, Harry B.: *See—*
Calhoon, Charles D., Sr.; Goetz, Louis P.; and Smith, Harry B., 3,701,989.

Smith, Jay, III; Schmidt, Gerald W.; and Jones, Lawrence T., to California R&D Center. Wheel apparatus and rack and pinion launcher enabling repeated strokes and having automatic ejector. 3,701,216, Cl. 46-206.000.

Smith Kline & French Laboratories: *See—*
Berges, David A.; Dunn, George L.; and Hoover, John R. E., 3,701,775.

Smith, Raymond Leonard, Jr., to C & M Manufacturing Company, Inc. Horizontally turnable material handling forks. 3,701,446, Cl. 214-730.000.

Smith, Terrill D., to Monsanto Company. Functional fluid compositions. 3,701,732, Cl. 252-78.000.

Smith, Terrill D., to Monsanto Company. Functional fluid compositions. 3,701,733, Cl. 252-78.000.

Smith-Schreyer & Assoc., Inc.: *See—*
Smith, Donald J., 3,701,839.

Smuck, Harry A. Smoke eliminator. 3,701,237, Cl. 55-230.000.

Snapp, Thomas Carter, Jr.; Blood, Alden E.; and Hagemeyer, Hugh John, Jr., to Eastman Kodak Company. Synthesis of unsaturated compounds. 3,701,798, Cl. 260-465.900.

Snow, Harland J.: *See—*
Pasquine, Arthur R.; Snow, Harland J.; and Wagner, Edward E., 3,701,353.

Snow, James A. Apparatus for cutting strips from vehicle tires. 3,701,296, Cl. 82-54.000.

Sobajima, Masaru, to Nippon Kogaku K.K. Device for quenching and cooling a specimen in a high-temperature microscopic viewing system. 3,701,580, Cl. 350-90.000.

Societe Anonyme Automobiles Citroen: *See—*
Grosseau, Albert A. G., 3,701,542.

Societe Anonyme DBA: *See—*
Toulier, Pierre, 3,701,285.

Societe Anonyme STOP: *See—*
Guidicelli, Charles, 3,701,614.
Guidicelli, Charles, 3,701,934.

Societe des Accumulateurs Fixes et de Traction (Societe Anonyme): *See—*
Gabano, Jean-Paul; and Gerbier, Gerard Marcel, 3,701,688.

Societe Industrielle Bull-General Electric (Societe Anonyme): *See—*
Prival, Guy; and Prieur, Lucien Robert, 3,701,858.

Societe Industrielle Honeywell Bull: *See—*
Laboue, Bernard Andre, 3,701,726.

Sogi, Hidenobu, to Kuraray Co., Ltd. Fibrous sheet material and method of producing the same. 3,701,701, Cl. 156-229.000.

Sogner, Dominik, to Chemiefaser Lenzing Akhengesellschaft Lenzing. Measuring installation. 3,701,281, Cl. 73-351.000.

Soileau, Hosea J. Water level control device. 3,701,260, Cl. 61-12.000.

Solartron Electronic Group Limited, The: *See—*
Ormiston, Peter Thomas, 3,701,206.

Soloway, Samuel B.; and Morales, Juan G., to Shell Oil Company. O-(Halovinyl) phosphorodichloridothioates. 3,701,818, Cl. 260-957.000.

Solvay & Cie: *See—*
Delbouille, Andre, 3,701,766.

Sorenson, Richard W., to Carling Electric, Inc. Switch case construction. 3,701,870, Cl. 200-168.00c.

Sortex Company of North America, Inc.: *See—*
Chapman, Robert R., 3,701,418.

Soward, Dallas V.: *See—*
Harris, Carl R.; Banks, Robert B.; and Soward, Dallas V., 3,701,279.

Sparton Corporation: *See—*
Widenhofer, James W., 3,701,175.

Spencer, John Gordon, to Northern Electric Company, Limited. Delay equalizing amplifier having bridge circuit input. 3,701,955, Cl. 330-21.000.

Spetz, Mary Ann. Pre-constructed buttonhole and method of incorporating same in a garment. 3,701,167, Cl. 2-266.000.

Sphere Investments Limited: *See—*
Hutter, James Francis; and Kelly, Leonard, 3,701,419.

Spiegelberg, Hans: *See—*
Edenhofer, Albrecht; and Spiegelberg, Hans, 3,701,777.

Spiik, Karl E. G. Turntable type display rack assembly. 3,701,437, Cl. 211-133.000.

Sprinkle, Leland W., to United States of America, Interior. Static stopper. 3,701,905, Cl. 307-133.000.

Sprout, Waldron & Company, Inc.: *See—*
Fisher, Chester Donald, 3,701,488.

Staarmann, Herbert; Brieke, Hans-Gunter; and Gerdes, Dirk, to Friedrich Uhde GmbH. Pipe connector for the interior of reaction vessels. 3,701,635, Cl. 23-289.000.

Stackhouse, Robert H. Rain gun case. 3,701,371, Cl. 150-52.00r.

Staller, Karel Jan, to International Telephone and Telegraph Corporation. Printing hammer arrangement. 3,701,995, Cl. 346-74.0mp.

Stamicarbon N.V.: *See—*
De Rooij, Abraham H.; and Kwanten, Ferdinand J. G., 3,701,809.

Standley, Wendell E., to Container Corporation of America. Mechanism for forming gusset folds in container wrappers. 3,701,231, Cl. 53-48.000.

Stankovich, Frank M. Motorcycle front end assembly. 3,701,544, Cl. 280-276.000.

Stanley, Delmar O., to TRW Inc. Valve seat inserts. 3,701,652, Cl. 75-126.00a.

Stapfer, Christian H., to Cincinnati Milacron Chemicals Inc. Alpha-oximino ketone anti-skinning agents. 3,701,781, Cl. 260-22.00a.

Stapleton, Richard Joseph, to Bell Telephone Laboratories, Incorporated. Concentrator arrangement for wideband switching. 3,701,849, Cl. 179-200.0tv.

Star Industries, Inc.: *See—*
Meyer, Leonard; Ashton, Walter G.; and Siegele, James E., 3,701,177.

Stark, John, Jr.; and Carpenter, David Harry, to RCA Corporation. Hue control circuit for a color television receiver. 3,701,845, Cl. 178-5.4he.

Starrett, William Roswell, to Bell Telephone Laboratories, Incorporated. Switching voice and data communications simultaneously over a common path. 3,701,851, Cl. 179-15.0by.

Stauffer Chemical Company: *See—*
Fancher, Llewellyn W., 3,701,799.
Lee, Hwalin; Pallos, Perenc M.; and Menn, Juluis J., 3,701,759.

Stech, Peter: *See—*
Born, Dieter; Stech, Peter; and Huebner, Werner, 3,701,535.

Steinhauser, Incorporated: *See—*
Steinhauser, Wilbur L., 3,701,468.

Steinhauser, Wilbur L., to Steinhauser, Incorporated. Mailing envelope and message piece/label combination. 3,701,468, Cl. 229-70.000.

Stenmark, Donald G., to Esso Research and Engineering Company. Production of aromatics. 3,701,813, Cl. 260-668.00a.

Stern, Herman Abraham, to RCA Corporation. Fabrication of liquid crystal devices. 3,701,368, Cl. 141-1.000.

Sternal, Lambert S., to Timesavers, Inc., mesne. Apparatus for effecting superior sanding. 3,701,219, Cl. 51-140.000.

Sternau, Martin M., to Grace, W. R., & Co. Apparatus for making a closure on a container. 3,701,234, Cl. 53-329.000.

Sternberg, James C.: *See—*
Deuringer, Rudolf; Ray, Robert A.; and Sternberg, James C., 3,701,716.

Stesiliver Control Royalties: *See—*
Davis, Ward B., 3,701,633.

Stewart, William K., to Seco-Dyn, Inc. Fast acting valve. 3,701,599, Cl. 137-625.480.

Stinton, Frederick M. Splicing system and jack for stressing concrete. 3,701,509, Cl. 254-29.00a.

Stocker, Winfried: *See—*
Rother, Wolfgang; Mordig, Eberhard; Wenzel, Erwin; Cronert, Dieter; Sand, Karl; Kasbohm, Joachim; Henicke, Heinz; Landmann, Helmut; and Stocker, Winfried, 3,701,881.

Stone, Hilton F., Jr., to United Aircraft Corporation. Apparatus for and the method of compacting an irregularly shaped article. 3,701,190, Cl. 29-156.800.

Stover, Arthur H. Oil absorbent slag compositions. 3,701,734, Cl. 252-88.000.

Strawser, Terry M.: *See—*
Fischer, Alfred; and Strawser, Terry M., 3,701,729.

Stream, Ralph M., to Owens-Corning Fiberglas Corporation. Apparatus for making continuous glass fibers. 3,701,642, Cl. 65-11.00w.

Streater Industries, Inc.: *See—*
Fenwick, Jay G., 3,701,325.

Street, Vern A.: *See—*
Neer, Harold M.; and Street, Vern A., 3,701,908.

Stroman, Larry J., to Daniel Industries, Inc. Method and apparatus for determining the supercompressibility factor of natural gas. 3,701,280, Cl. 73-194.00m.

Stuck, Carl G.; and Wilkes, Arthur L., to American Data Systems Inc. Data terminal system. 3,701,856, Cl. 179-26.00a.

Stumpf, Gunter. Apparatus for forming stacks of cloth webs which are cut to length. 3,701,299, Cl. 83-72.000.

Suga, Hiroyoshi: *See—*
Fujita, Hideo; Ishitobi, Masami; Suga, Hiroyoshi; Ishiwari, Keishiro; Yotsui, Yoshikazu; Yamashita, Tadao; Edamitsu, Masayuki; and Moriwaki, Shokichi, 3,701,720.

Suhami, Albert; Sabbah, Benjamin; Inbar, Dan; Yarom, Artzi; and Ben-Zeev, Dan, to Elscint Ltd. Phototubes for scintillation detector. 3,701,901, Cl. 250-71.50r.

Sumitomo Metal Industries, Limited: *See—*
Shirane, Yasuhior; and Yamada, Junzo, 3,701,397.

Sumoto, Misao; Komagata, Hideki; Matsumoto, Hiroshi; and Furusawa, Hironobu, to Toyo Boseki Kabushiki Kaisha. Production of elastomers. 3,701,755, Cl. 260-75.00r.

Surface Technology Corporation: *See—*
Rausch, John J.; and Van Thyne, Ray J., 3,701,655.

Sutton Engineering Company: *See—*
Roesch, Christian, 3,701,274.

Suzuki, Akio: *See—*
Miyata, Akira; Okubo, Hideyo; Tomita, Chikayoshi; and Suzuki, Akio, 3,701,677.

Suzuki, Morio: *See—*
Tamura, Kiminori; Morozumi, Manami; Noda, Yutaka; Suzuki, Morio; and Yoshino, Hiroshi, 3,701,772.

Suzuki, Tsutomu, to Pioneer Electronic Corporation. Magnetic head using the hall effect for reveberation. 3,701,861, Cl. 170-100.2ch.

Svanstrom, Elis Kjell Ake; and Ramqvist, Lars Henry, to Rederiakliebolaget Nordstjernan. Process for the production of high melting metals. 3,701,649, Cl. 75-84.500.

Swain, Roger S.: *See—*
Gallant, Reginald R.; Swain, Roger S.; and Waterman, Neil S., 3,701,945.

Sweetser, Donald Arthur, to Thomas Industries Inc. Combined lighting and ventilating fixture. 3,701,895, Cl. 240-9.00a.

Swett, Leo Ralph; and Paris, Gerard Yvon, to Abbott Laboratories. 1,3-Dimethyl-4,5-di (p-substituted phenyl)-6H-pyrrolo [2,3-c] pyrazoles. 3,701,785, Cl. 260-310.00r.

Sylvania Electric Products, Inc.: *See—*

Franklin, Dennis M.; Hornreich, Richard M.; and Rubinstein, Harvey, 3,701,983.

Sylvester, Peter A.; and Wojciechowski, Walter J., to Harris-Intertype Corporation. Ink and dampener form roll interruption for cleaning purposes. 3,701,316, Cl. 101-148.000.

Systems Capital Corporation: *See—*
Connell, Joseph A.; and Baranyi, Anthony J., 3,701,262.

Tada, Tetsuya. Hand sprayer. 3,701,478, Cl. 239-333.000.

Taguchi, Kazuo; and Tsuchida, Hiroaki, to Tokyo Shibaura Electric Company , Ltd. Three-phase bus system and interconnecting member. 3,701,929, Cl. 317-103.000.

Takahashi, Mitsuo: *See—*
Asui, Hiroshi; and Takahashi, Mitsuo, 3,701,647.

Takase, Yoshiyuki: *See—*
Minami, Shinsaku; Matsumoto, Jun-Ichi; Shimizu, Masanao; and Takase, Yoshiyuki, 3,701,773.

Takeda Chemical Industries, Ltd.: *See—*
Heki, Takao; Yasumatsu, Katsuharu; Sawada, Koshichi; and Funakoshi, Yoshiro, 3,701,667.

Taller, Robert A.: *See—*
Johnson, William R.; Sevy, William R.; Weigel, James E.; and Taller, Robert A., 3,701,746.

Tami, Joseph, Jr. Electrolytic transistor with collector in base-emitter current path. 3,701,930, Cl. 317-230.000.

Tamura, Kiminori; Morozumi, Manami; Noda, Yutaka; Suzuki, Morio; and Yoshino, Hiroshi, to Yamasa Shoyu Kabushiki Kaisha. Production of nucleotide anhydrides. 3,701,772, Cl. 260-211.50r.

Tanaka, Kazumitsu: *See—*
Miyauchi, Sakae; Tanaka, Kazumitsu; and Goto, Nobuo, 3,701,847.

Tanguay, Jean Paul, to Placements Jean Paul Tanguay Ltee, mesne. Multiple saw tree slasher. 3,701,370, Cl. 143-46.000.

Tarducci, Tullio; Gatti, Alvaro; and Buffa, Antonio. Folding bags to be used in shopping having collapsible wheels, and capable to be reduced to a hand-bag. 3,701,541, Cl. 280-37.000.

Tatchell, Keith Reid: *See—*
Lee, Edward William; Tatchell, Keith Reid; Challis, Kenneth John; and Cockerton, Kenneth Archibald, 3,701,680.

Tateno, Harunobu: *See—*
Usuda, Shogo; Mizusasa , Susumu; and Tateno, Harunobu, 3,701,857.

Tauern, Dankmar: *See—*
Gstohl, Norbert; and Tauern, Dankmar, 3,701,879.

Taylor, Frank. Decorative wall facing. 3,701,228, Cl. 52-309.000.

Taylor, Richard R.; and MacKay, Frank A., to United States of America, Navy. Oscillograph recorder trace blanker apparatus. 3,702,002, Cl. 346-109.000.

Taylor, Ruth N.: *See—*
Pennington, Davis W.; and Taylor, Ruth N., 3,701,897.

Taylor-Wilson Manufacturing Company: *See—*
McConnell, William M.; Bradley, William H.; Chappel, Howard E.; Whitfield, George P.; and Carey, Raymond L., 3,701,336.

Technequip Limited: *See—*
Maxwell, John Russell, 3,701,421.

Teeters, James L.: *See—*
Clark, Wallace; Jones, Reginald A.; and Teeters, James L., 3,701,543.

Teitelbaum, Bernard R., to Bendix Corporation, The. Annular slot proportional jet amplifier for a fluidic sound generator. 3,701,334, Cl. 116-137.000.

Tekology Corporation: *See—*
Blengsli, Helmer L., 3,701,671.

Tektronix, Inc.: *See—*
Geerling, Leonardus Johannes, 3,701,993.

Telecommunications Technology, Inc.: *See—*
Lubarsky, Andre, Jr., 3,701,953.

Telephone- und Telegraphen-Fabriks Aktiengesellschaft Kapsch & Sonne, Firma: *See—*
Karobath, Ernst; and Pultizer, Wolfgang, 3,701,689.

Teller, William M., to American Hydrotherm Corporation. Heating system. 3,701,473, Cl. 237-8.00r.

Temkin, Kenneth N.: *See—*
Wall, Donald G.; and Temkin, Kenneth N., 3,701,618.

Tenneco Chemicals Inc.: *See—*
Fischer, Alfred; and Strawser, Terry M., 3,701,729.

Terasaka, Masaji: *See—*
Iijima, Hiroshi; Terasaka, Masaji; and Tokita, Osamu, 3,701,693.

Terminal Testing Laboratories, Inc.,: *See—*
Appleman, Milo Don, 3,701,728.

Tesi, Giorgio: *See—*
McQuistion, William E.; and Tesi, Giorgio, 3,701,573.

Testolin, Reno J., to Richardson Company, The. Continuous sheet graining process. 3,701,222, Cl. 51-317.000.

Texaco Inc.: *See—*
Pomatti, Renato C., 3,701,750.

Texas Instruments Incorporated: *See—*
Eskew, Mark F.; and Hyde, Beverly F., 3,702,004.
Gartman, William W.; Evans, James G.; and Allen, Harold A., 3,701,682.
Santala, Teuvo J.; and Hirsbrunner, Hans G., 3,701,654.

Theobald, Stuart J. Rescue and safety vest. 3,701,395, Cl. 182-3.000.

Thermo-Couple Products Company, Inc.: *See—*
Finney, Philip F., 3,701,884.

Thermo-Sentinel Corporation: *See—*
Walls, Henry M.; Sayers, George M.; and Walls, Noel B., 3,701,344.

Thiele, Heinz; Becker, Dietrich; Hochstein, Roland; Rockstroh, Horst; and Lieckfeldt, Hans, to Zeiss Ikon Aktiengesellschaft. Photographic camera with motorized focal length and distance adjustment of the objective. 3,701,309, Cl. 95-45.000.

Thiokol Chemical Corporation: *See—*
Askins, Robert E.; and Roys, George P., 3,701,278.
Pelham, Joseph E.; and Osburn, Albert Ray, 3,701,256.

Thiokol Chemical Corporation, mesne: *See—*
Von Der Heide, Elmer J., 3,701,700.

Thomas Industries Inc.: *See—*
Sweetser, Donald Arthur, 3,701,895.

Thomas, Jerald F.: *See—*
Brown, Carl A.; and Thomas, Jerald F., 3,701,424.

Thompson, James M.: *See—*
Revitz, Martin; and Thompson, James M., 3,701,931.

Thomsen, Jack W.; Nupnau, Arthur E.; Kim, Raymond W. H.; and Cherniavskyj, Jaroslav, to Bell & Howell Company. Motion picture projector. 3,701,595, Cl. 352-124.000.

Thornton, Roger Lea: *See—*
Settlage, Paul Herman; and Thornton, Roger Lea, 3,701,745.

Thorp, Richard Conrad, to American Can Company. Easy opening container closure. 3,701,454, Cl. 220-54.000.

Thuler, Oscar, to Canrad Precision Industries, Inc. Device for illuminating flat carriers with markings. 3,701,900, Cl. 250-71.00r.

Tilp, George E., to Adams Industries. Electric heater for coffee percolator. 3,701,883, Cl. 219-436.000.

Timesavers, Inc., mesne: *See—*
Sternal, Lambert S., 3,701,219.

Tirelli, Paolo; and Saporiti, Elio, to ATOS Apparecchiature Oleodinamiche S.r.l. Hydraulic solenoid valve directly operated with adjustable over-ride speed. 3,701,366, Cl. 137-625.650.

Todd, Percy E. Method and apparatus for conveying dust. 3,701,566, Cl. 302-66.000.

Toho Beslon Co., Ltd.: *See—*
Yoshida, Masatoshi; Saji, Yasuo; Saito, Kazuhisa; and Ikegami, Shigeru, 3,701,819.

Tokita, Osamu: *See—*
Iijima, Hiroshi; Terasaka, Masaji; and Tokita, Osamu, 3,701,693.

Tokyo Shibaura Electric Company , Ltd.: *See—*
Taguchi, Kazuo; and Tsuchida, Hiroaki, 3,701,929.

Tomita, Chikayoshi: *See—*
Miyata, Akira; Okubo, Hideyo; Tomita, Chikayoshi; and Suzuki, Akio, 3,701,677.

Tonka Corporation: *See—*
Jensen, Douglas S., 3,701,217.

Tonn, Erwin W. Sealing gasket for a container. 3,701,452, Cl. 220-46.00r.

Toulier, Pierre, to Societe Anonyme DBA. Gearing starter. 3,701,285, Cl. 74-6.000.

Townsend, Curtis J. Manual fruit harvester. 3,701,242, Cl. 56-328.00r.

Toyo Boseki Kabushiki Kaisha: *See—*
Sumoto, Misao; Komagata, Hideki; Matsumoto, Hiroshi; and Furusawa, Hironobu, 3,701,755.

Toyo Kogyo Co., Ltd.: *See—*
Gomada, Nobuyasu; and Kosaka, Genzo, 3,701,874.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Arai, Hiroshi; Nakamura, Akira; Okamoto, Atutoshi; and Okumura, Shunji, 3,701,569.
Ito, Shin; Kubo, Seitoku; and Mori, Takakazu, 3,701,294.
Kadono, Yoji; Ogasawara, Yukio; and Kamo, Keizo, 3,701,189.

Trebitz, Doris; and Rumpoldin, Ernst, to Jenoptik Jena, G.m.b.H. Reproduction lens of high image-resolving power with an image-side numerical aperture of 0.5 comprising three doublets and three single lens elements. 3,701,588, Cl. 350-215.000.

Treptow, Heinz; Frank, Benno; and Schippers, Heinz, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Air heating box for textile machines. 3,701,268, Cl. 68-5.00d.

Trinh, Van Quy: *See—*
Pillon, Daniel; and Trinh, Van Quy, 3,701,776.

Trown, Patrick Willoughby: *See—*
Miller, Philip Andrew; and Trown, Patrick Willoughby, 3,701,774.

TRW Inc.: *See—*
Le Vantine, Allan D., 3,701,521.
Simmons, William W., 3,701,956.
Stanley, Delmar O., 3,701,652.
Wuerker, Ralph F., 3,701,957.

Tsuchida, Hiroaki: *See—*
Taguchi, Kazuo; and Tsuchida, Hiroaki, 3,701,929.

Tsujimoto, Kazumi N., to Air Reduction Company, Incorporated. Electron beam gun. 3,701,915, Cl. 313-82.000.

Tsuyama, Naoto: *See—*
Okada, Shigetaka; and Tsuyama, Naoto, 3,701,714.

Tuftamatic, Inc.: *See—*
Randolph, Arthur J., 3,701,174.

Tuitt, Milton James, to International Paper Company. Web-lock carton. 3,701,415, Cl. 206-45.140.

Tull, Herbert G., III., to Koerner Waldorf Corporation. Strapping apparatus. 3,701,314, Cl. 100-28.000.

Turkish, Disney, to Cutler-Hammer Inc. Wideband frequency scanning radio receiver. 3,701,949, Cl. 325-332.000.

Turner, Arthur Raymond. Building frame brackets. 3,701,613, Cl. 287-189.36c.

Tuttle, Eleanor Porter: *See—*
Tuttle, Fordyce E., 3,701,990.
Tuttle, Fordyce E.; deceased (by Tuttle, Eleanor Porter; executrix). Fiber optic display device. 3,701,990, Cl. 346-1.000.
Tuttle, Ralph L. Oil skimmer. 3,701,430, Cl. 210-242.000.
Tuwa-Plastik Dr. Herbert Warnecke Erzeugunt Von Kunststoffartikeln: *See—*
Warnecke, Herbert, 3,701,455.
Twentieth Century Products Corporation: *See—*
Kamphausen, Dan, 3,701,169.
Tyco Laboratories, Inc.: *See—*
Labelle, Harold E., Jr.; and Little, William T., 3,701,636.
Tyndall, R. B.: *See—*
Wise, David F.; Tyndall, R. B.; and Jones, Donald E., 3,701,240.
Tzakis, George J.: *See—*
Hepner, Charles F.; and Tzakis, George J., 3,701,843.
Ueshima, Kumao; Fukada, Kenzo; Yoshinaga, Masakazu; and Nakazona, Kiroshi, to Nippon Steel Corporation. Apparatus for supporting a blast furnace. 3,701,516, Cl. 266-25.000.
Uhde, Friedrich, GmbH: *See—*
Kiesow, Wilhelm; and Heuser, Gerhard, 3,701,196.
Ulrich, Henri: *See—*
Sayigh, Adnan A. R.; and Ulrich, Henri, 3,701,788.
U.M.C. Industries, Inc.: *See—*
Erickson, Gustav F., 3,701,523.
Unican Security Systems, Ltd.: *See—*
Belzberg, Samuel I., 3,701,450.
Union Carbide Corporation: *See—*
Hargitay, Bartholomew, 3,701,764.
Johnson, William R.; Sevy, William R.; Weigel, James E.; and Taller, Robert A., 3,701,746.
Keogh, Michael J.; and Ingberman, Arthur K., 3,701,806.
Matzner, Markus; Noshay, Allen; and Barclay, Robert, Jr., 3,701,815.
Richardson, Dean E.; Peterson, Adolph A., 111; and Brady, Harold P., Jr., 3,701,742.
Uniroyal, Inc.: *See—*
Schichman, Daniel; and Hong, Sung Whee, 3,701,702.
United Aircraft Corporation: *See—*
Fassler, Michael H.; and Brinker, Norman E., 3,701,379.
Markowski, Stanley J., 3,701,255.
Perley, Richmond, 3,701,996.
Stone, Hilton F., Jr., 3,701,190.
United Data Services: *See—*
Ingalls, Daniel H. H., Jr., 3,702,005.
United States of America
Agriculture: *See—*
Maerker, Gerhard; and Kenney, Harold E., 3,701,802.
Pittman, Allen G.; and Wasley, William L., 3,701,752.
Pittman, Allen G.; and Wasley, William L., 3,701,792.
Army: *See—*
Ferrara, Peter B., 3,701,498.
Interior: *See—*
Sprinkle, Leland W., 3,701,905.
Interior, mesne: *See—*
Farrell, Robert P., Jr., 3,701,486.
National Aeronautics and Space Administration: *See—*
Wilson, Maywood L., 3,701,631.
National Aeronautics and Space Administration; Deputy Administrator; with respect to an invention of:
Couvillon, Lucien A., Jr.; Carl, Christopher; Goldstein, Richard M.; Posner, Edward C.; and Green, Richard R. Apparatus for deriving synchronizing pulses from pulses in a single channel PCM communications system. 3,701,894, Cl. 235-181.000.
Navy: *See—*
Harris, William G., Jr., 3,701,331.
McQuistion, William E.; and Tesi, Giorgio, 3,701,573.
Seminatore, Albert F., 3,701,954.
Taylor, Richard R.; and MacKay, Frank A., 3,702,002.
Zimmer-Galler, Roswitha; and Rose, James E., 3,701,697.
Navy, mesne: *See—*
Calhoon, Charles D., Sr.; Goetz, Louis P.; and Smith, Harry B., 3,701,989.
Navy, The: *See—*
Lichfield, Ernest W., 3,701,283.
Universal Electric Company: *See—*
Phillips, Benjamin, 3,701,574.
Universal Instruments Corporation: *See—*
Ackerman, Daniel Whitney, 3,701,367.
Universal Oil Products Company: *See—*
Hardison, Leslie C., 3,701,823.
Upjohn Company, The: *See—*
Carleton, Peter S.; Farrissey, William J., Jr.; and Rose, James S., 3,701,756.
Coats, John H.; Herr, Milton E.; and Herr, Ross R., 3,701,790.
Hester, Jackson B., Jr., 3,701,782.
Saaty, Nabil Najib; and Jacobs, Richard Lee, 3,701,796.
Sayigh, Adnan A. R.; and Ulrich, Henri, 3,701,788.
Urkevich, Michael P.: *See—*
Holub, Fred F.; Berger, Abe; Hardman, Bruce B.; and Urkevich, Michael P., 3,701,795.
U.S. Philips Corporation: *See—*
Allaart, Houterman Jan, 3,701,988.
Allen, David Henry Odhams; Hall, Raymond Frederick; and Weston, George Frederick, 3,701,918.
Buschow, Kurt Heinz Jurgen; and Westendorp, Frans Frederik, 3,701,695.
Freudeberg, Jurgen; and Rudolff, Hermann, 3,701,982.
Kuiken, Hendrik, 3,701,287.
Schouten, Gerrit Hilbertus; Bohlmeijer, Nicolaas; Van Der Steeg, Hendrik; and Van der Maarel, Marinus Cornelis, 3,701,981.
Sluijter, Robert Joahnnes; and Van Gerwen, Petrus Josephus, 3,701,852.
Van Der Houwen, Derk, 3,701,947.
Von Der Pfordten, Dietrich, 3,701,973.
Usuda, Shogo; Mizusasa , Susumu; and Tateno, Harunobu, to Fujitsu Limited and Nippon Telegraph & Telephone Public Corporation. Multifrequency signal receiving circuit. 3,701,857, Cl. 179-84.0vf.
Usui, Yukio: *See—*
Iwawaki, Yasutaka; Yoshikawa, Minoru; and Usui, Yukio, 3,701,860.
Vadnais, James D. Electrical junction box. 3,701,448, Cl. 220-3.900.
Vaillant, Joh, KG: *See—*
Reichmann, Horst; and Rottmann, Gernot, 3,701,481.
Vaka, Gregory A.: *See—*
Mayer, Gerald C.; Vaka, Gregory A.; Zuckermann, Raymond S.; and Jarman, Alonzo B., 3,701,414.
Valerius, Paul Nicholas: *See—*
Giddings, Sydney Arthur; and Valerius, Paul Nicholas, 3,701,706.
Van Den Hoven, Wilhelm Elbertus, to Lenderink & Co., N.V. Edible foam-product. 3,701,669, Cl. 99-139.000.
Van Der Burg, Willem Jacob, to Organon Inc. Dihenzo-pyrazinoazepines. 3,701,778, Cl. 260-268.0pc.
Van Der Houwen, Derk, to U.S. Philips Corporation. Method of making a decision on the value of a pulsatory signal and device for carrying out this method. 3,701,947, Cl. 325-321.000.
Van Der Lely, Cornelis. Trailers. 3,701,443, Cl. 214-77.000.
Van der Maarel, Marinus Cornelis: *See—*
Schouten, Gerrit Hilbertus; Bohlmeijer, Nicolaas; Van Der Steeg, Hendrik; and Van der Maarel, Marinus Cornelis, 3,701,981.
Van Der Steeg, Hendrik: *See—*
Schouten, Gerrit Hilbertus; Bohlmeijer, Nicolaas; Van Der Steeg, Hendrik; and Van der Maarel, Marinus Cornelis, 3,701,981.
Van Der Zeeuw, Abraham J., to Shell Oil Company. Copper, nickel, cobalt and iron separation process. 3,701,650, Cl. 75-101.0be.
Van Gerwen, Petrus Josephus: *See—*
Sluijter, Robert Joahnnes; and Van Gerwen, Petrus Josephus, 3,701,852.
Van Renssen, Marinus, to RCA Corporation. Method of assembling a mask with a frame assembly for mounting in a cathode-ray tube using a remote assembly position. 3,701,185, Cl. 29-25.150.
Van Thyne, Ray J.: *See—*
Rausch, John ..; and Van Thyne, Ray J., 3,701,655.
Vann Industries, Inc.: *See—*
Wise, David F.; Tyndall, R. B.; and Jones, Donald E., 3,701,240.
Varian Associates: *See—*
Hansen, Stuart C., 3,701,959.
Vayssiere, Pierre; and Gomez-de-Bonilla, Juan Kindelan Y., to Institut de Recherches de la Siderurgie Francaise. Apparatus for the continuous refining of metals. 3,701,519, Cl. 266-34.00r.
Veb Kombinat Luft-und Kaltetechnik: *See—*
Rother, Wolfgang; Mordig, Eberhard; Wenzel, Erwin; Cronert, Dieter; Sand, Karl; Kasbohm, Joachim; Henicke, Heinz; Landmann, Helmut; and Stocker, Winfried, 3,701,881.
VEB Kombinat Mess- und Regelungstechnik Dessau Werk Massindustrie Werdau: *See—*
Binder, Wolfgang; Kalkreuth, Hasso; Glaser, Josef; and Fahrenkrug, Gunter, 3,701,470.
Veeder Industries, Inc.: *See—*
Bateman, Coates F., 3,701,994.
Velasquez, Joe M. Stretch shoe string. 3,701,572, Cl. 24-117.00a.
Ventresca, Mario: *See—*
Patterson, Roger Lee; and Ventresca, Mario, 3,701,385.
Ventron Corporation: *See—*
Wade, Robert C., 3,701,794.
Vers, Rudi, to Fichtel & Sachs AG. Method of providing a partition wall in the cylinder of a telescopic suspension unit. 3,701,197, Cl. 29-522.000.
Vestal, Charles R.: *See—*
Ramirez, W. Fred Jr.; and Vestal, Charles R., 3,702,003.
Vignini, Walter R., to Gould Inc., mesne. Battery holder and three-position switch for hearing aid. 3,701,862, Cl. 179-107.00h.
Viking Snowmobile, Inc.: *See—*
Hendrickson, George Vernon, 3,701,394.
Vilas Industries Limited: *See—*
Favreau, Marcel, 3,701,506.
Vinella, Frank P. Dry grinding terrazzo floor finishing machine. 3,701,221, Cl. 51-177.000.
Voeste, Theodor: *See—*
Schmidt, Hans Joachim; and Voeste, Theodor, 3,701,793.
Vogt, Wilheim, to Aktiengesellschaft fur Vogt-Patentverwertungen. Frame structure. 3,701,553, Cl. 287-54.00c.
Von, Angerer Roland; and Gillig, Witmar, to Schnellpressenfabrik Koenig and Bauer Aktiengesellschaft. Finishing unit for stereo plates. 3,701,183, Cl. 29-21.000.
Von Der Heide, Elmer J., to Thiokol Chemical Corporation, mesne. Process for producing a continuous non-woven fabric. 3,701,700, Cl. 156-72.000.

Von Der Pfordten, Dietrich, to U.S. Philips Corporation. Data processing arrangement for processing waiting time commands. 3,701,973, Cl. 340-172.500.

Von Linsowe, Carl V., 25% to Page, John T. Articulated frame for mobile ground-traveling instrumentality. 3,701,358, Cl. 137-344.000.

Von Meyer, William C.: *See—*
Seidel, Michael C.; Von Meyer, William C.; and Greenfield, Stanley A., 3,701,784.

Voparil, Rastislav, to Chieana Modrany narodni podnik. Method of effecting X-ray analyses. 3,701,899, Cl. 250.051.500.

Waaben, Sigurd G., to Bell Telephone Laboratories, Incorporated. Circuit employing charge storage diode in fast discharge mode. 3,701,907, Cl. 307-235.000.

Wada, Shigeru; Oi, Hidesaburo; Matsuzawa, Norio; Nishimura, Hiroshi; and Sasaki, Juntaro, to Mitsui Petrochemical Industries, Ltd. Process for polymerization of olefins and catalysts therefor. 3,701,763, Cl. 260-88.20r.

Wada, Yukio; and Abura, Yoshinori, to Matsushita Electric Works, Ltd. Heating device for hair curlers and clips. 3,701,882, Cl. 219-222.000.

Wade, Robert C., to Ventron Corporation. Method for preparing 10-chlorophenoxarsine. 3,701,794, Cl. 260-440.000.

Wagner, Edward E.; *See—*
Pasquine, Arthur R.; Snow, Harland J.; and Wagner, Edward E., 3,701,353.

Wagoner, Robert B.; and Kinghorn, John S., to Aerojet-General Corporation, mesne. Method of removing liquid from a sunken floating roof of a liquid storage tank. 3,701,458, Cl. 137-1.000.

Wagstaff, Ian: *See—*
Osmond, Desmond Wilfred John; Wagstaff, Ian; and Waite, Frederick Andrew, 3,701,747.

Waite, Frederick Andrew: *See—*
Osmond, Desmond Wilfred John; Wagstaff, Ian; and Waite, Frederick Andrew, 3,701,747.

Wakinson, Leonard James: *See—*
Moore, Brian Joseph; and Wakinson, Leonard James, 3,701,657.

Wald Manufacturing Company: *See—*
Pawsat, Carlton P.; and Humlong, Robert F., 3,701,289.

Walford, Robert Bernard: *See—*
Schmidt, Robert Benjamin; Smith, George Wallace, Jr.; and Walford, Robert Bernard, 3,702,010.

Walker, Frank Stanley: *See—*
Wills, Graham Boyce; and Walker, Frank Stanley, 3,701,683.

Wall, Donald G.; and Temkin, Kenneth N. Peristalic extrusion press. 3,701,618, Cl. 425-192.000.

Wall, Eugene W.: *See—*
Wall, Harry W.; and Wall, Eugene W., 3,701,188.

Wall, Harry W.; and Wall, Eugene W., to Wall Machine Works. Helically fluted router bit. 3,701,188, Cl. 29-103.00a.

Wall Machine Works: *See—*
Wall, Harry W.; and Wall, Eugene W., 3,701,188.

Walls, Henry M.; Sayers, George M.; and Walls, Noel B., to Thermo-Sentinel Corporation. Waterless cooking apparatus. 3,701,344, Cl. 126-388.000.

Walls, Noel B.: *See—*
Walls, Henry M.; Sayers, George M.; and Walls, Noel B., 3,701,344.

Walters, Joseph J.; and McGibbon, Verdun R., to Lukens Steel Company. Burning table and exhaust system therefor. 3,701,514, Cl. 266-15.000.

Walton, Richard S.: *See—*
Bergey, John M.; Blouch, Eric L.; and Walton, Richard S., 3,701,249.

Wanner, Louis R., to GTE Sylvania Incorporated. Cathode ray tube electrode element. 3,701,920, Cl. 313-292.000.

Ward Brothers (Sherburn) Limited: *See—*
Ward, Wilfred; and Ward, Frank, 3,701,836.

Ward, Ernest. Tube paste squeezer for tooth paste and the like. 3,701,459, Cl. 222-102.000.

Ward, Frank: *See—*
Ward, Wilfred; and Ward, Frank, 3,701,836.

Ward, Wilfred; and Ward, Frank, to Ward Brothers (Sherburn) Limited. Building structures. 3,701,836, Cl. 174-48.000.

Waring, Robert K., Jr.: *See—*
Barkley, John R.; O'Reilly, James J.; and Waring, Robert K., Jr., 3,701,585.

Warnecke, Herbert, to Tuwa-Plastik Dr. Herbert Warnecke Erzeugunt Von Kunststoffartikeln. Can for liquids and process for closing same. 3,701,455, Cl. 220-66.000.

Warren, Jasper N. Drilling method. 3,701,388, Cl. 175-50.000.

Warrick, Frank G.: *See—*
Overway, Roy E.; and Warrick, Frank G., 3,701,275.

Warshaw, Abe: *See—*
Negra, John S.; and Warshaw, Abe, 3,701,822.

Washington, Le Baron H.: *See—*
Gutterman, Robert P.; and Washington, Le Baron H., 3,701,565.

Wasley, William L.: *See—*
Pittman, Allen G.; and Wasley, William L., 3,701,752.
Pittman, Allen G.; and Wasley, William L., 3,701,792.

Waterman, Neil S.: *See—*
Gallant, Reginald R.; Swain, Roger S.; and Waterman, Neil S., 3,701,945.

Watson, Frederick D.: *See—*
Cole, Ernest A.; Mayse, Weldon D.; and Watson, Frederick D., 3,701,723.

Watts, Hargus, to Curtiss-Wright Corporation. Heat exchanger supporting means. 3,701,381, Cl. 165-82.000.

Webb, Richard C.; and Heath, Robert T., to Colorado Instruments, Inc. Data collection station and static card reader therefor. 3,701,885, Cl. 235-61.11c.

Weichselbaum, Theodore E.: *See—*
Plumpe, William H., Jr.; and Weichselbaum, Theodore E., 3,701,601.

Weigel, James E.: *See—*
Johnson, William R.; Sevy, William R.; Weigel, James E.; and Taller, Robert A., 3,701,746.

Weinrich, Bernard W.; and Boyce, David C., to Monsanto Company. Method for improving oral health and hygiene in dogs and cats. 3,701,830, Cl. 424-94.000.

Weldotron Corporation: *See—*
Zelnick, Seymour, 3,701,229.

Welsch, Bernhard J.; and Schafer, James A., to Western Gear Corporation. Taper tension web winding machine. 3,701,493, Cl. 242-75.530.

Welz, Rudolf. Emergency trackage for vehicle wheels. 3,701,474, Cl. 238-14.000.

Wendler, Kenneth T.: *See—*
Daniels, David A.; and Wendler, Kenneth T., 3,701,730.

Wenther, Joseph F.: *See—*
Crawsord, Gerald R.; and Wenther, Joseph F., 3,701,617.

Wenzel, Erwin: *See—*
Rother, Wolfgang; Mordig, Eberhard; Wenzel, Erwin; Cronert, Dieter; Sand, Karl; Kasbohm, Joachim; Henicke, Heinz; Landmann, Helmut; and Stocker, Winfried, 3,701,881.

Wespi, George E., to Norton Company. Electric feed for machine element. 3,701,220, Cl. 51-165.740.

Westendorp, Frans Frederik: *See—*
Buschow, Kurt Heinz Jurgen; and Westendorp, Frans Frederik, 3,701,695.

Western Electric Company, Incorporated: *See—*
Brown, William Brownloe, 3,701,491.
Hetrich, Harold Arthur, 3,701,705.
Pinnolis, Samuel; and Schmidt, Wilhelm E. A., 3,701,520.

Western Gear Corporation: *See—*
Welsch, Bernhard J.; and Schafer, James A., 3,701,493.

Westinghouse Electric Corporation: *See—*
Rively, Clair M.; and Petro, James, 3,701,880.

Weston, George Frederick: *See—*
Allen, David Henry Odhams; Hall, Raymond Frederick; and Weston, George Frederick, 3,701,918.

Wetzel, Robert D., 10% to O'Connor, James R. Compact sewage treatment apparatus. 3,701,426, Cl. 210-152.000.

Whitear, Brian Ronald David: *See—*
Pratt, John McDonald; and Whitear, Brian Ronald David, 3,701,660.

Whitfield, George P.: *See—*
McConnell, William M.; Bradley, William H.; Chappel, Howard E.; Whitfield, George P.; and Carey, Raymond L., 3,701,336.

Whitmore, Keith E.: *See—*
Barr, Charles R.; Williams, John; and Whitmore, Keith E., 3,701,783.

Whitney, John K. Inflatable body support. 3,701,173, Cl. 5-349.000.

Wichers, Max F. Head engaging spectacle structure. 3,701,591, Cl. 351-41.000.

Wicks Organ Company, The: *See—*
Bosche, Walwin J., Jr., 3,701,833.

Widenhofer, James W., to Sparton Corporation. Hydrophone damper assembly. 3,701,175, Cl. 9-8.000.

Widman, Erwin Richard. Tool for assembling ducts having Pittsburgh type joints. 3,701,194, Cl. 29-278.000.

Wiedenmann, Hans, to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH. Electric lamp with refractory metal components connected to molybdenum foils. 3,701,921, Cl. 313-332.000.

Wilcox, Harold R., to Riggs & Lambard Inc. Apparatus for applying liquids to a running web. 3,701,269, Cl. 68-19.000.

Wilkes, Arthur L.: *See—*
Stuck, Carl G.; and Wilkes, Arthur L., 3,701,856.

Williams, John: *See—*
Barr, Charles R.; Williams, John; and Whitmore, Keith E., 3,701,783.

Williams, Robert C., to Dresser Industries, Inc. Well packer apparatus. 3,701,382, Cl. 166-183.000.

Willis, Cullie B., Jr., to Foster Wheeler Corporation. Apparatus anf process for slag deposit removal. 3,701,341, Cl. 122-392.000.

Willmore, Charles R., to FMC Corporation. Embossed core wrap for electrical cables. 3,701,840, Cl. 174-107.000.

Willow Hill Industries, Inc.: *See—*
Puzik, Otto V., 3,701,564.

Wills, Graham Boyce; and Walker, Frank Stanley, to British Insulated Callender's Cables Limited. Manufacture of high voltage insulated electric cables. 3,701,683, Cl. 117-232.000.

Wilson, Maywood L., to United States of America, National Aeronautics and Space Administration. Nondestructive spot test method for titanium and titanium alloys. 3,701,631, Cl. 23-230.00r.

Windstrup, Robert F.; and Chebuhar, Charles J., to Continental Can Company, Inc. Egg carton denester machine. 3,701,440, Cl. 214-8.50a.

Winitz, Milton, to Morton-Norwich Products, Inc., mesne. Process for making amino acid composition. 3,701,666, Cl. 99-1.000.

Wirth, Walter; and Kuhi, Burkhart, to August Sauter KG. Flat vibrating measuring string. 3,701,392, Cl. 177-210.000.

Wise, David F.; Tyndall, R. B.; and Jones, Donald E., to Vann Industries, Inc. Tobacco topping apparatus. 3,701,240, Cl. 56-63.000.

Witsey, Noel John Charles; and Clark, James Charles, to Intertherm Limited. H. F. heating apparatus. 3,701,875, Cl. 219-10.810.

Wojciechowski, Walter J.: *See—*
Sylvester, Peter A.; and Wojciechowski, Walter J., 3,701,316.

Wolf, Gerhard Max: *See—*
Schwerdhofer, Hans Joachim; and Wolf, Gerhard Max, 3,701,546.

Wolf, Stanley, to Docent Corporation. Responsive answer system. 3,701,205, Cl. 35-9.00g.

Woodrow, James R.; and Lynski, Robert R., to Continental Can Company, Inc. Shipping container with emptying chute. 3,701,466, Cl. 229-17.00b.

Woods, Virgle L.; and Readus, La Verne. Fishing pole rack. 3,701,504, Cl. 248-39.000.

Woolslayer, Homer J.; Woolslayer, Joseph R.; Jenkins, Cecil; and Campbell, Erwin A., to Moore, Lee C., Corporation. Horizontally moving pipe rack. 3,701,435, Cl. 211-60.00r.

Woolslayer, Joseph R.: *See—*
Woolslayer, Homer J.; Woolslayer, Joseph R.; Jenkins, Cecil; and Campbell, Erwin A., 3,701,435.

Wooten, Willis C., Jr.: *See—*
Meyer, Max F., Jr.; Combs, Robert L.; and Wooten, Willis C., Jr., 3,701,741.

Worden, Raymond D., to Ruska Instrument Corporation. Reaction vessel assembly. 3,701,634, Cl. 23-259.000.

Worley, Arthur C.; and Kane, Ronald S., to Esso Research and Engineering Company. High temperature slide valve. 3,701,359, Cl. 137-375.000.

Wornke, Louis J.; and Pestka, John A., to Illinois Tool Works Inc. Grommet type fastener. 3,701,373, Cl. 151-41.750.

Wray, Rhodes Ebeling, to Du Pont de Nemours, E. I., and Company. Drive roll for a yarn windup. 3,701,490, Cl. 242-18.0dd.

Wriedt, Alfred. Device for the movement of articles with a flat, rigid, holding surface. 3,701,412, Cl. 198-127.00r.

Wright, Barry, Corporation: *See—*
Schubert, Dale W.; and Ezekiel, Frederick D., 3,701,499.

Wright, William H. B., III, 1/2 to Maxon, Glenway, Jr. Method of flame cutting mud relief concavities in sprockets. 3,701,692, Cl. 148-9.000.

Wuerker, Ralph F., to TRW Inc. Coherence controlled ruby laser. 3,701,957, Cl. 331-94.000.

Wust, Olivier, to Rieter Machine Works, Ltd. Method of braking and releasing a bobbin mandrel and winding apparatus for implementing the aforesaid method. 3,701,492, Cl. 242-39.000.

Wust, Toni, to Meyer, Roth & Pastor. Device for moving chain links in a resistance welding machine. 3,701,253, Cl. 59-31.000.

Xerox Corporation: *See—*
Holliday, Robert G., 3,701,495.
Ono, Tsuneyoshi, 3,701,250.

Yamada Hiroshi: *See—*
Sanjo, Sadao; Yamada Hiroshi; and Gono, Yoshio, 3,701,608.

Yamada, Junzo: *See—*
Shirane, Yasuhior; and Yamada, Junzo, 3,701,397.

Yamamoto, Kozo, to Matsushita Electric Industrial Co., Ltd. Educational projector having movable shutters. 3,701,204, Cl. 35-9.00e.

Yamamoto, Tatsumi: *See—*
Schuler, Manfred; and Yamamoto, Tatsumi, 3,701,363.

Yamasa Shoyu Kabushiki Kaisha: *See—*
Tamura, Kiminori; Morozumi, Manami; Noda, Yutaka; Suzuki, Morio; and Yoshino, Hiroshi, 3,701,772.

Yamashita, Tadao: *See—*
Fujita, Hideo; Ishitobi, Masami; Suga, Hiroyoshi; Ishiwari, Keishiro; Yotsui, Yoshikazu; Yamashita, Tadao; Edamitsu, Masayuki; and Moriwaki, Shokichi, 3,701,720.

Yarom, Artzi: *See—*
Suhami, Albert; Sabbah, Benjamin; Inbar, Dan; Yarom, Artzi; and Ben-Zeev, Dan, 3,701,901.

Yasumatsu, Katsuharu: *See—*
Heki, Takao; Yasumatsu, Katsuharu; Sawada, Koshichi; and Funakoshi, Yoshiro, 3,701,667.

Yazawa, Kenichiro: *See—*
Kondo, Asaji; Fujisaki, Hiroshi; Miyano, Shizuo; and Yazawa, Kenichiro, 3,701,663.

Yoshida, Masatoshi; Saji, Yasuo; Saito, Kazuhisa; and Ikegami, Shigeru, to Toho Beslon Co., Ltd. Method for production of acrylic composite fiber. 3,701,819, Cl. 264-168.000.

Yoshikawa, Minoru: *See—*
Iwawaki, Yasutaka; Yoshikawa, Minoru; and Usui, Yukio, 3,701,860.

Yoshinaga, Masakazu: *See—*
Ueshima, Kumao; Fukada, Kenzo; Yoshinaga, Masakazu; and Nakazona, Kiroshi, 3,701,516.

Yoshino, Hiroshi: *See—*
Tamura, Kiminori; Morozumi, Manami; Noda, Yutaka; Suzuki, Morio; and Yoshino, Hiroshi, 3,701,772.

Yotsui, Yoshikazu: *See—*
Fujita, Hideo; Ishitobi, Masami; Suga, Hiroyoshi; Ishiwari, Keishiro; Yotsui, Yoshikazu; Yamashita, Tadao; Edamitsu, Masayuki; and Moriwaki, Shokichi, 3,701,720.

Yungbluth, Russell L., to Olin Corporation. Proportioning girth reduction in high frequency welding or copper base alloy tubing. 3,701,876, Cl. 219-67.000.

Zaffignani, Giovanni: *See—*
Brunialti, Bruno; and Zaffignani, Giovanni, 3,701,841.

Zallen, Joseph: *See—*
Zeltzer, Harry I., 3,701,590.

Zeffer, Arthur A.; and Briscoe, James A., to Goodrich, B. J., Company, The. Aircraft wheel well seal. 3,701,500, Cl. 244-103.00r.

Zeiss Ikon Aktiengesellschaft: *See—*
Thiele, Heinz; Becker, Dietrich; Hochstein, Roland; Rockstroh, Horst; and Lieckfeldt, Hans, 3,701,309.

Zeller, Gerard A.: *See—*
Berkeley, Arnold D.; Bold, Eugene W.; Jefferson, Donald E.; and Zeller, Gerard A., 3,701,972.

Zelnick, Seymour, to Weldotron Corporation. Method and apparatus for skin-packaging article between film-on-film. 3,701,229, Cl. 53-22.00a.

Zeltzer, Harry I., 1/2 to Zallen, Joseph. Method of improving color discrimination. 3,701,590, Cl. 351-39.000.

Zenith Radio Corporation: *See—*
Hepner, Charles F.; and Tzakis, George J., 3,701,843.

Zenzefilis, George E. Method and apparatus for recording and reproducing video. 3,701,846, Cl. 178-6.6dd.

Zimmer, William F., Jr.; and Chew, Harvey L., to Norton Company. Method of making an abrasive foam laminate. 3,701,703, Cl. 156-278.000.

Zimmer-Galler, Roswitha; and Rose, James E., to United States of America, Navy. Pressure compensated pyrotechnic time delay composition. 3,701,697, Cl. 149-40.000.

Zimmermann, Detlef: *See—*
Eisele, Werner Frank; and Zimmermann, Detlef, 3,701,835.

Zoecon Corporation: *See—*
Zurfluh, Rene C.; and Siddall, John B., 3,701,800.

Zollner, Friedrich, to Jenoptik Jena G.m.b.H. Holographic interference microscopy. 3,701,579, Cl. 350-12.000.

Zuckerman, John S. Method of producing and harvesting white asparagus spears. 3,701,241, Cl. 56-327.00a.

Zuckermann, Raymond S.: *See—*
Mayer, Gerald C.; Vaka, Gregory A.; Zuckermann, Raymond S.; and Jarman, Alonzo B., 3,701,414.

Zurfluh, Rene C.; and Siddall, John B., to Zoecon Corporation. Cis 1-methyl-2-isopropenyl-cyclobutyl acetic acid. 3,701,800, Cl. 260-468.00h.

Zurn Engineers: *See—*
Downey, Thomas A., 3,701,422.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 31ST DAY OF OCTOBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Brown, Omar L., to Ermal C. Fraze. Easy-opening can end with nonremovable tab. Re. 27,518, 10–31–72, Cl. 220–54.

Coltron Industries, Inc.: *See*—
Leitner, Frank W., and Griffin. Re. 27,516.

Container Corporation of America: *See*—
Shepherd, Kenneth M., and Whipperman. Re. 27,519.

Fraze, Ermal C.: *See*—
Brown, Omar L. Re. 27,518.

Griffin, William T.: *See*—
Leitner, Frank W., and Griffin. Re. 27,516.

Hultberg, Donald E., and L. A. Jeffries, to Northrop Corp. Electron beam scanning device utilizing digital control signals, and capable of random addressing. Re. 27,520, 10–31–72, Cl. 315—12.

Jeffries, Lester A.: *See*—
Hultberg, Donald E., and Jeffries, Re. 27,520.

Kalart Co., Inc., The: *See*—
Schwartz, Morris, and Kaprelian. Re. 27,517.

Kaprelian, Edward K.: *See*—
Schwartz, Morris, and Kaprelian. Re. 25,517.

Leitner, Frank W., and W. T. Griffin, to Coltron Industries, Inc. Cloth straightening apparatus. Re. 27,516, 10–31–72, Cl. 26—51.5.

Northrop Corp.: *See*—
Hultberg, Donald E., and Jeffries. Re. 27,520.

Redo, Ronald W. Maze device. Re. 27,521, 10–31–72. Cl. 273—153.

Schwart, Morris, and E. K. Kaprelian, to The Kalart Co., Inc. Method of cumulatively recording intelligence on a record card. Re. 27,517, 10–31–72, Cl. 96—27.

Shepherd, Kenneth M., and R. L. Whipperman, to Container Corp. of America. Package for sterilized article. Re. 27,519, 10–31–72, Cl. 229—87.

Whipperman, Ronald L.: *See*—
Shepherd, Kenneth M. Re. 27,519.

LIST OF DESIGN PATENTEES

Albright, Calvin J. Jr. Gun butt plate. 225,007, 10–31–72. Cl. D22—7.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Kanno, Kyusei. 225,034.

Beckman Instruments, Inc.: *See*—
Greene, Robert L. 225,005.

Bienkowski, James J., and J. T. Houlihan, to SCM Corp. Adding machine. 225,036, 10–31–72, Cl. D64—11.

Braun Aktiengesellschaft: *See*—
Oberheim, Robert. 225,019.

Buhren, Wilhelm, to United States Philips Corp. Vaporizer. 225,009, 10–31–72, Cl. D23—149.

Chandler, Jasper S., and S. P. Hines, to Eastman Kodak Co. Microfilm reader housing. 225,035, 10–31–72, Cl. D61—1.

Cordell, Carl R., Jr. Fishing lure. 225,008, 10–31–72. Cl. D22—27.

Current, Wayne A., to The Singer Co. Portable sewing machine. 225,037, 10–31–72, Cl. D70—1.

Cutler, Lester M., and P. Friedman, to Vibra-Baths Home Products, Inc. Portable massager. 225,038, 10–31–72, Cl. D83—1.

Donihue, Cecelia. Fortune indicating chart. 225,015, 10–31–72, Cl. D34—5.

Dosso, Felice: *See*—
Gonsalves, George E., and Dosso. 225,032.

Gonsalves, George E., and F. Dosso. Overhead conveyor bracket. 225,032, 10–31–72, Cl. D55—1.

Eastman Kodak Co.: *See*—
Chaldler, Jasper S., and Hines. 225,035.

Emerson Electric Co.: *See*—
Steiner, Robert E. 225,011.
Steiner, Robert E. 225,010.

First National Bank in Peru: *See*—
Roebuck, Malcolm J. 225,031.

Francis, John P. Automobile rain visor for drive-in theatres. 225,001, 10–31–72, Cl. D14—6.

Francis, John P. Folding rain visor for automobiles. 225,002, 10–31–72, Cl. D14—6.

Francis, John P. Automobile rain visor for drive-in theatres. 225,003, 10–31–72, Cl. D14—6.

Friedman, Paul: *See*—
Cutler, Lester M., and Friedman. 225,038.

General Electric Co.: *See*—
Stewart, Earl K. 225,013.

Gigante, Giuseppe. Baby seat. 225,004, 10–31–72, Cl. D15—1.

Gillette Co., The: *See*—
Petrillo, Richard J. 224,997.

Greene, Robert L., to Beckman Instruments, Inc. Device for electrochemical analysis. 225,005, 10–31–72, Cl. D16—2.

Hall, Christopher. Sectional panel element of a fiberglass reinforced polyester housing structure. 224,999, 10–31–72, Cl. D13—1.

Halpern, Arthur, to M. I. Sales, Inc. Building toy or similar article. 225,016, 10–31–72, Cl. D34—15.

Harrison, Clarence E. Bath room cabinet. 224,995, 10–31–72. Cl. D6—127.

Hines, Stephen P.: *See*—
Chandler, Jasper S., and Hines. 225,035.

Houlihan, John T.: *See*—
Bienkowski, James J., and Houlihan. 225,036.

Hyman, Ray. Musical instrument carrying case. 225,033, 10–31–72. Cl. D56—1.

International Flavors & Fragrances Inc.: *See*—
Sayre, Van Vechten, Kirkpatrick, and Zelenko. 224,998.

Iskyan, Mary K. Overshoe. 224,992, 10–31–72, Cl. D2—279.

Jackson, Erval D. Four wheel tractor. 225,000, 10–31–72. Cl. D14—3.

Kanno, Kyusei, to Asahi Kogaku Kogyo Kabushiki Kaisha. Single lens reflex camera. 225,034, 10–31–72, Cl. D61—1.

Katz, Maurice D. Transverse radio tuning indicator face plate. 225,012, 10–31–72, Cl. D26—1.

Kirkpatrick, Hugh R.: *See*—
Sayre, Van Vechten, Kirkpatrick, and Zelenko. 224,998.

Lea, Melvin A., to Oneida Ltd. Spoon or similar article. 225,028, 10–31–72, Cl. D54—12.

Levine, Linda Ellen, and D. A. Zippel. Pillow. 224,993, 10–31–72, Cl. D3—9.

M. I. Sales, Inc.: *See*—
Halpern, Arthur. 225,016.

Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 225,020, 10–31–72, Cl. D54—12.

Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 225,021, 10–31–72, Cl. D54—12.

Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 225,022, 10–31–72, Cl. D54—12.

Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 225,023, 10–31–72, Cl. D54—12.

Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 225,024, 10–31–72, Cl. D54—12.

Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 225,025, 10–31–72, Cl. D54—12.

Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 225,026, 10–31–72, Cl. D54—12.

Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 225,027, 10–31–72, Cl. D54—12.

Marick, Louis, to United States of America, Army. Tire. 225,040, 10–31–72, Cl. D90—20.

Marick, Louis, to United States of America, Army. Tire. 225,041, 10–31–72, Cl. D90—20.

McLaren, Bruce, Motor Racing Ltd.: *See*—
McLaren, Bruce Leslie. 225,017.

McLaren, Bruce Leslie, to McLaren, Bruce, Motor Racing Ltd. Model racing car. 225,017, 10–31–72, Cl. D34—15.

Muse, George B. Block. 225,006, 10–31–72, Cl. D18—2.

Oberheim, Robert, to Braun Aktiengesellschaft. Height measuring ruler or similar article. 225,019, 10–31–72, Cl. D52—6.

Oneida Ltd.: *See*—
Manderfield, Ellen B. 225,020.
Manderfield, Ellen B. 225,021.
Manderfield, Ellen B. 225,002.
Manderfield, Ellen B. 225,023.
Manderfield, Ellen B. 225,024.
Manderfield, Ellen B. 225,025.
Manderfield, Ellen B. 225,026.
Manderfield, Ellen B. 225,027.

Oneida Ltd.: *See*—
Lea, Melvin A. 225,028.

Oneida Ltd.: *See*—
Richmond, Colin B. 225,029.

Oneida Ltd.: *See*—
Perry, Frank R. 225,030.

Perry, Frank R., to Oneida Ltd. Spoon or similar article. 225,030, 10–31–72, Cl. D54—12.

Petrillo, Richard J., to The Gillette Co. Combined packaging and dispensing tray for razor blade cartridges. 224,997, 10–31–72, Cl. D9—187.

Pierce, Larry Lee. Route holder or similar article. 225,042, 10–31–72, Cl. D96—9.

Putterman, Joseph C. Pole connector for shelving, racks, and the like. 224,996, 10–31–72, Cl. D8—236.
Richmond, Colin B. III, to Oneida Ltd. Spoon or similar article. 225,029, 10–31–72. Cl. D54—12.
Roebuck, Malcolm J., to First National Bank in Peru. Machine for assembling buttons. 225,031, 10–31–72, Cl. D55—1.
Sauritis, Irene. Clip-on pacifier, partly retractible. D225,039, 10–31–72, Cl. D83—8.
Sayre, Van Vechten, H. R. Kirkpatrick, and H. Zelenko, to International Flavors & Fragrances Inc. Toothpaste tube. 224,998, 10–31–72, Cl. D9—194.
SCM Corporation: *See*—
Bienkowski, James J., and Houlihan. 225,036.
Shiman, Leonard, to Shiman Manufacturing Co., Inc. Finger ring. 225,018, 10–31–72, Cl. D45—10.
Shiman Manufacturing Co., Inc.: *See*—
Shiman, Leonard. 225,018.
Singer Co., The: *See*—
Current, Wayne A. 225,037.
Sokolowski, Henry J. Adjustable leg rest. 224,994, 10–31–72, Cl. D6—32.
Sonex, Inc.: *See*—
Weinberg, Harold M. 225,014.
Steiner, Robert E., to Emerson Electric Co. Exhaust fan cover. 225,010, 10–31–72, Cl. D23—151.
Steiner Robert E., to Emerson Electric Co. Exhaust fan cover. 225,011, 10–31–72, Cl. D23—151.
Stewart, Earl K., to General Electric Company. Cabinet for an electronic control. 225,013, 10–31–72, Cl. D26—5.
United States of America, Army: *See*—
Marick, Louis. 225,040.
Marick, Louis. 225,041.
United States Philips Corp.: *See*—
Buhren, Wilhelm. 225,009.
Vibra-Baths Home Products, Inc.: *See*—
Cutler, Lester M., and Friedman. 225,038.
Weinberg, Harold M., to Sonex, Inc. Stock quotation terminal. 225,014. 10–31–72. Cl. D26—5.
Zelenko, Harry: *See*—
Sayre, Van Vechten, Kirkpatrick, and Zelenko. 224,998.
Zippel, Deborah Ann: *See*—
Levine, Linda Ellen, and Zippel. 224,993.

CLASSIFICATION OF PATENTS

ISSUED OCTOBER 31, 1972

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

724R	3,701,164
243R	3,701,165
244	3,701,166
266	3,701,167

CLASS 3

36	3,701,168

CLASS 4

57	3,701,169
174	3,701,170
187A	3,701,171
252	3,701,172

CLASS 5

349	3,701,173
356	3,701,174

CLASS 8

7	3,701,624
94	3,701,625
115.5	3,701,626
142	3,701,627

CLASS 9

8R	3,701,175

CLASS 11

1R	3,701,176

CLASS 12

145	3,701,273

CLASS 15

50R	3,701,177
308	3,701,178

CLASS 16

55	3,701,180
90	3,701,179

CLASS 21

54R	3,701,628

CLASS 23

230R	3,701,631
232E	3,701,632
253TP	3,701,633
259	3,701,634
289	3,701,635
301SP	3,701,636
312R	3,701,637
312	3,701,638

CLASS 24

117A	3,701,572
204	3,701,181

CLASS 26

51.5	Re.27,516

CLASS 28

59	3,701,182

CLASS 29

21	3,701,183
25.15	3,701,185
	3,701,193
25.16	3,701,184
33A	3,701,186
95	3,701,187
103A	3,701,188
148.4A	3,701,189
156.8	3,701,190
195	3,701,639
207.5SL	3,701,191
	3,701,192
278	3,701,194
434	3,701,195
494	3,701,196
522	3,701,197
578	3,701,198

CLASS 33

185R	3,701,199
321Z	3,701,200

CLASS 34

60	3,701,201
72	3,701,202
170	3,701,203

CLASS 35

9E	3,701,204
9G	3,701,205
25	3,701,206
26	3,701,207

CLASS 36

2.5AL	3,701,208

CLASS 40

129C	3,701,210
152.1	3,701,209

CLASS 42

65	3,701,213

CLASS 43

44.87	3,701,212

CLASS 44

66	3,701,640
73	3,701,641

CLASS 46

25	3,701,214
163	3,701,215
206	3,701,216
222	3,701,217

CLASS 47

1.43	3,701,218

CLASS 51

140	3,701,219
165.74	3,701,220
177	3,701,221
241S	3,701,223
317	3,701,222

CLASS 52

27	3,701,224
71	3,701,225
109	3,701,226
224	3,701,227
309	3,701,228

CLASS 53

22A	3,701,229
48	3,701,230
	3,701,231
187	3,701,232
198	3,701,233
329	3,701,234

CLASS 55

84	3,701,235
114	3,701,236
230	3,701,237

CLASS 56

10.4	3,701,238
13.5	3,701,239
63	3,701,240
327A	3,701,241
328R	3,701,242
400.18	3,701,243

CLASS 57

18	3,701,244
34R	3,701,245
	3,701,246
81	3,701,247
153	3,701,248

CLASS 58

50R	3,701,249
76	3,701,250
126R	3,701,252

CLASS 59

16	3,701,251
31	3,701,253

CLASS 60

39.47	3,701,256
39.61	3,701,254
39.72R	3,701,255
54.6E	3,701,257

CLASS 61

1F	3,701,258
	3,701,259
12	3,701,260
72.3	3,701,261

CLASS 62

45	3,701,262
63	3,701,263
191	3,701,264
475	3,701,265

CLASS 65

11W	3,701,642
62	3,701,643
106	3,701,644
116	3,701,266

CLASS 66

86	3,701,267

CLASS 68

5D	3,701,268
19	3,701,269

CLASS 70

30	3,701,647

CLASS 71

1	3,701,645
	3,701,646

CLASS 72

56	3,701,271
57	3,701,270
97	3,701,272
165	3,701,274
335	3,701,275
404	3,701,276

CLASS 73

35	3,701,278
65	3,701,279
194M	3,701,280
229	3,701,277
351	3,701,281
358	3,701,282
401	3,701,283
416	3,701,284

CLASS 74

6	3,701,285
142	3,701,286
462	3,701,287
471XY	3,701,288
594.4	3,701,289
	3,701,290
	3,701,291
695	3,701,623
752E	3,701,292
759	3,701,293
866	3,701,294

CLASS 75

72	3,701,648
84.5	3,701,649
101BE	3,701,650
101R	3,701,651
124	3,701,653
126A	3,701,652
173	3,701,654
174	3,701,655

CLASS 81

52.4	3,701,295

CLASS 82

54	3,701,296

CLASS 83

13	3,701,297
23	3,701,298
72	3,701,299
80	3,701,300
151	3,701,301

CLASS 84

346	3,701,833
419	3,701,834

CLASS 85

8.8	3,701,303
80	3,701,302

CLASS 91

457	3,701,305
482	3,701,306

CLASS 95

10PO	3,701,307
11.5R	3,701,308
42	3,701,304
45	3,701,309
53E	3,701,310

CLASS 96

27	Re.27,517
35	3,701,657
36.1	3,701,658
38.3	3,701,659
48R	3,701,660
55	3,701,661
	3,701,662
86	3,701,663
111	3,701,664
300	3,701,656

CLASS 98

110	3,701,311

CLASS 99

1	3,701,665
	3,701,666
81	3,701,667
91	3,701,668
139	3,701,669
235A	3,701,670
238.6	3,701,312
330	3,701,313

CLASS 100

28	3,701,314

CLASS 101

37	3,701,315
148	3,701,316
170	3,701,317
336	3,701,318

CLASS 102

7	3,701,319
57	3,701,573

CLASS 104

6	3,701,320
148LM	3,701,321

CLASS 105

197B	3,701,322
215C	3,701,323
369B	3,701,324

CLASS 106

98	3,701,671
282	3,701,672

CLASS 108

1	3,701,325
53	3,701,326

CLASS 111

81	3,701,327

CLASS 112

121.29	3,701,328
252	3,701,329

CLASS 113

15A	3,701,330

CLASS 114

221A	3,701,331

CLASS 116

119	3,701,332
124R	3,701,333
137	3,701,334

CLASS 117

17.5	3,701,673
43	3,701,674
47A	3,701,675
49	3,701,676
69	3,701,678
93.31	3,701,679
138.8F	3,701,680
161KP	3,701,681
201	3,701,682
232	3,701,683

CLASS 118

104	3,701,335
423	3,701,336
637	3,701,337

CLASS 119

4	3,701,338
106	3,701,339

CLASS 122

367C	3,701,340
392	3,701,341

CLASS 123

41.16	3,701,342

CLASS 126

271.2R	3,701,343
388	3,701,344

CLASS 128

2R	3,701,345
2.06E	3,701,346
5	3,701,347
20	3,701,348
82.1	3,701,349
214B	3,701,350
260	3,701,351
305	3,701,352

CLASS 131

23R	3,701,353

CLASS 132

11A	3,701,354

CLASS 134

19	3,701,355
58R	3,701,356

CLASS 136

30	3,701,684
83R	3,701,685
83	3,701,686
86R	3,701,687
100R	3,701,688
135R	3,701,689
175	3,701,690
179	3,701,691

CLASS 137

1	3,701,458
81.5	3,701,357
344	3,701,358
375	3,701,359
454.6	3,701,360
543.23	3,701,361
556.3	3,701,362
599	3,701,363
	3,701,598
625.41	3,701,364
625.43	3,701,365
625.48	3,701,599
625.65	3,701,366

CLASS 140

119	3,701,367

CLASS 141

1	3,701,368

CLASS 143

43C	3,701,369
46	3,701,370

CLASS 148

6.24	3,701,693
9	3,701,692
12	3,701,694
103	3,701,695
175	3,701,696

CLASS 149

40	3,701,697

CLASS 150

52R	3,701,371

CLASS 151

22	3,701,372
41.75	3,701,373

CLASS 152

330	3,701,374

CLASS 156

18	3,701,698
69	3,701,699
72	3,701,700
229	3,701,701
244	3,701,702
278	3,701,703
297	3,701,704
306	3,701,706
345	3,701,705
380	3,701,707
582	3,701,708
583	3,701,709

CLASS 157

1.33	3,701,375

CLASS 160

121	3,701,376

CLASS 161

148	3,701,710
214	3,701,711
262	3,701,743

CLASS 162

65	3,701,712

CLASS 164

113	3,701,377
	3,701,378
132	3,701,379
334	3,701,380

CLASS 165

82	3,701,381

CLASS 166

183	3,701,382
280	3,701,383
292	3,701,384

CLASS 172

386	3,701,385

CLASS 173

78	3,701,386

CLASS 174

41	3,701,835
48	3,701,836
50	3,701,837
68.5	3,701,838
78	3,701,839
107	3,701,840

CLASS 175

6	3,701,387
50	3,701,388
246	3,701,389

CLASS 177

113	3,701,390
207	3,701,391
210	3,701,392

CLASS 178

4.1B	3,701,841
5.4HE	3,701,842
	3,701,844
	3,701,845
6.6DD	3,701,846
6.7A	3,701,847
26A	3,701,856

CLASS 179

1.5	3,701,848
2TV	3,701,849
5.4SD	3,701,843
6C	3,701,850
15BY	3,701,851
15FS	3,701,852
18AD	3,701,854
18ES	3,701,855
18HA	3,701,853
84VF	3,701,857
100.2CH	3,701,861
100.2C	3,701,858
	3,701,859
100.2Z	3,701,860
107H	3,701,862
175.2R	3,701,863
	3,701,864
181R	3,701,865

CLASS 180

5R	3,701,394
51	3,701,393

CLASS 182

3	3,701,395

CLASS 188

21	3,701,396
33	3,701,397
71.8	3,701,398
	3,701,399
72.6	3,701,400
134	3,701,401
314	3,701,402

CLASS 192

38	3,701,403
56R	3,701,404

CLASS 194

74	3,701,600
101	3,701,405

CLASS 195

28R	3,701,713
31R	3,701,714
65	3,701,715
127	3,701,716
139	3,701,717

CLASS 198

20	3,701,406
	3,701,407
32	3,701,408
54	3,701,409
106	3,701,410
109	3,701,411
127R	3,701,412
183	3,701,413
203	3,701,414

CLASS 200

144B	3,701,866
148E	3,701,867

167R 3,701,869
168C 3,701,870
192 3,701,868

CLASS 203
141 3,701,718

CLASS 204
35R 3,701,677
131 3,701,719
132 3,701,720
159.16 3,701,721
162R 3,701,722
188 3,701,723
290F 3,701,724
297M 3,701,725
297R 3,701,726

CLASS 206
45.14 3,701,415
65C 3,701,416

CLASS 209
5 3,701,417
99 3,701,418
111.8 3,701,419
135 3,701,420
164 3,701,421
241 3,701,422

CLASS 210
14 3,701,727
29 3,701,728
80 3,701,423
90 3,701,424
136 3,701,425
152 3,701,426
169 3,701,427
170 3,701,428
198C 3,701,609
242 3,701,429
3,701,430
321 3,701,431
401 3,701,432
436 3,701,433
477 3,701,434

CLASS 211
60RS 3,701,435
60SK 3,701,436
133 3,701,437
184 3,701,438

CLASS 212
55 3,701,439

CLASS 214
8.5SS 3,701,441
8.5A 3,701,440
16.4A 3,701,442
77 3,701,443
146 3,701,444
506 3,701,445
730 3,701,446

CLASS 217
26.5 3,701,447

CLASS 219
8.5 3,701,871
10.55 3,701,872
10.57 3,701,874
10.61 3,701,873
10.81 3,701,875
67 3,701,876
97 3,701,877
98 3,701,878
99 3,701,879
121EB 3,701,880
123 3,701,881
222 3,701,882
436 3,701,883
449 3,701,884

CLASS 220
3.9 3,701,448
21 3,701,449
24 3,701,450
27 3,701,451
46R 3,701,452
54 Re.27,518
3,701,453
3,701,454
66 3,701,455
97C 3,701,456

CLASS 221
120 3,701,457

CLASS 222
102 3,701,459
193 3,701,460

CLASS 223
102 3,701,461
3,701,462

CLASS 224
45R 3,701,463

CLASS 226
3 3,701,464
155 3,701,608

CLASS 229
14C 3,701,465
17B 3,701,466
31R 3,701,467
70 3,701,468
87R Re.27,519

CLASS 233
20A 3,701,469

CLASS 234
99 3,701,470

CLASS 235
61.11C 3,701,885
61.11E 3,701,886
78 3,701,471
91R 3,701,887
150.1 3,701,888
150.31 3,701,890
151.1 3,701,889
151.21 3,701,891
153 3,701,892
154 3,701,893
181 3,701,894

CLASS 236
12R 3,701,472

CLASS 237
8R 3,701,473

CLASS 238
14 3,701,474

CLASS 239
11 3,701,475
102 3,701,476
276 3,701,477
333 3,701,478
407 3,701,479
420 3,701,480
553.5 3,701,481
590.3 3,701,482

CLASS 240
9A 3,701,895
25 3,701,896
78CF 3,701,897
103R 3,701,898

CLASS 241
5 3,701,484
32 3,701,483
3,701,485
46.11 3,701,486
178 3,701,487
256 3,701,488

CLASS 242
7.21 3,701,489
18DD 3,701,490
25A 3,701,491
39 3,701,492
75.53 3,701,493
184 3,701,494
197 3,701,495

CLASS 243
29 3,701,496
35 3,701,497

CLASS 244
17.11 3,701,498
17.27 3,701,499
103R 3,701,500
114R 3,701,501
122AD 3,701,502
3,701,503

CLASS 248
39 3,701,504
56 3,701,505
188.5 3,701,506
204 3,701,610
467 3,701,507

CLASS 249
129 3,701,508

CLASS 250
51.5 3,701,899
71R 3,701,900
71.5R 3,701,901
83.3R 3,701,902

CLASS 252
1 3,701,729
49.9 3,701,730
62.1 3,701,731
78 3,701,732
3,701,733
88 3,701,734
99 3,701,735
3,701,736
182 3,701,737
188.3 3,701,738
454 3,701,739

CLASS 254
29A 3,701,509
47 3,701,510

CLASS 259
3 3,701,511
191 3,701,512

CLASS 260
2H 3,701,740
2.3 3,701,741
9R 3,701,753
17R 3,701,742
22A 3,701,781
23.7 3,701,744
28.5R 3,701,745
31.6 3,701,746
33.6 3,701,747
40 3,701,748
41A 3,701,751
41C 3,701,749
41 3,701,750
64 3,701,754
75R 3,701,755
3,701,757
78TF 3,701,756
78.5R 3,701,758
82 3,701,760
85.5R 3,701,761
88.2C 3,701,762
88.2R 3,701,763
88.3L 3,701,764
93.7 3,701,765
3,701,766
97.5 3,701,767
112R 3,701,768
152 3,701,769
210E 3,701,770
211R 3,701,771
211.5R 3,701,772
240A 3,701,773
240H 3,701,759
243C 3,701,775
243R 3,701,774
247.1 3,701,776
268PC 3,701,778
268PH 3,701,777
293.58 3,701,786
294.8C 3,701,780
294.8G 3,701,779
308D 3,701,783
308R 3,701,782
3,701,784
310R 3,701,785
343.5 3,701,787
346.3 3,701,788
347.9 3,701,789
348C 3,701,790
348R 3,701,792
377 3,701,791
404 3,701,802
409 3,701,793
440 3,701,794
448.2N 3,701,795
453SP 3,701,796
465.5R 3,701,797
465.9 3,701,798
468H 3,701,800
468P 3,701,799
473S 3,701,801
475SC 3,701,814
526R 3,701,803
530R 3,701,804
531R 3,701,805
543R 3,701,806
553A 3,701,807
556A 3,701,808
566A 3,701,809
597B 3,701,810
615F 3,701,752
621R 3,701,811
666PY 3,701,812
668A 3,701,813
824R 3,701,815
927 3,701,816
932 3,701,817
957 3,701,818

CLASS 261
18A 3,701,513

CLASS 264
168 3,701,819
182 3,701,820
318 3,701,821

CLASS 266
15 3,701,514
23K 3,701,515
25 3,701,516
29 3,701,517
34LM 3,701,518
34R 3,701,519

CLASS 269
13 3,701,520
48 3,701,521

CLASS 270
39 3,701,522
67 3,701,523

CLASS 271
10 3,701,524
43A 3,701,525
51 3,701,526

CLASS 272
1B 3,701,527
6 3,701,528
83R 3,701,529

CLASS 273
43R 3,701,530
95R 3,701,531
102.4 3,701,532
106.5R 3,701,533
153R Re.27,521

CLASS 274
1L 3,701,534

CLASS 277
3 3,701,535
56 3,701,536

CLASS 279
1A 3,701,537
1G 3,701,539
30 3,701,538

CLASS 280
5A 3,701,540
37 3,701,541
43.12 3,701,211
124B 3,701,542
234 3,701,543
276 3,701,544
282 3,701,545
289 3,701,546
432 3,701,547

CLASS 285
24 3,701,549
39 3,701,550
81 3,701,548
137R 3,701,551
158 3,701,552

CLASS 287
54C 3,701,553
78 3,701,554
110 3,701,555
189.36C 3,701,613

CLASS 290
40B 3,701,556

CLASS 292
251.5 3,701,557

CLASS 294
33 3,701,558
74 3,701,559

CLASS 296
1R 3,701,560
27 3,701,561
35A 3,701,562

CLASS 298
38 3,701,563

CLASS 301
131 3,701,564

CLASS 302
14 3,701,565
66 3,701,566

CLASS 303
6C 3,701,567
21BE 3,701,569
21P 3,701,568
22R 3,701,616
70 3,701,570

CLASS 307
9 3,701,903
10BP 3,701,904
133 3,701,905
149 3,701,906
235 3,701,907
3,701,908
246 3,701,909
255 3,701,910

CLASS 308
18 3,701,571
72 3,701,574

CLASS 310
60 3,701,911
90 3,701,912
247 3,701,913

CLASS 312
45 3,701,575
231 3,701,576
339 3,701,577

CLASS 313
66 3,701,914
82 3,701,915
108B 3,701,916
188 3,701,917
209 3,701,918
250 3,701,919
292 3,701,920
332 3,701,921

CLASS 315
10 3,701,922
12 Re.27,520
3,701,923
84.6 3,701,924
101 3,701,925

CLASS 316
19 3,701,578

CLASS 317
15 3,701,926
16 3,701,927
99 3,701,928
103 3,701,929
230 3,701,930
234R 3,701,931
254 3,701,932

CLASS 318
7 3,701,933
102 3,701,934
325 3,701,935
595 3,701,936

CLASS 321
2 3,701,937
11 3,701,938
45R 3,701,939

CLASS 324
1 3,701,940
37 3,701,941
51 3,701,942
58.5R 3,701,943
126 3,701,944

CLASS 325
25 3,701,945
64 3,701,946
321 3,701,947
329 3,701,948
332 3,701,949
430 3,701,950
455 3,701,951

CLASS 328
59 3,701,954
127 3,701,952
155 3,701,953

CLASS 330
21 3,701,955

CLASS 331
94 3,701,957
94.5 3,701,956

CLASS 333
70S 3,701,958
83R 3,701,959

CLASS 335
154 3,701,960

CLASS 336
192 3,701,961

CLASS 337
101 3,701,962

CLASS 338
128 3,701,963

CLASS 339
17F 3,701,964
60M 3,701,965
95R 3,701,966
217S 3,701,967

CLASS 340
17 3,701,968
25 3,701,969
162 3,701,970
172.5 3,701,971
3,701,972
3,701,973
3,701,974
3,701,975
3,701,976
3,701,977
173AM 3,701,980
173R 3,701,978
3,701,979
3,701,984
174AC 3,701,981
174MA 3,701,982
174QA 3,701,983
228 3,701,985
279 3,701,986
280 3,701,987
324A 3,701,988

CLASS 343
16R 3,701,989

CLASS 346
1 3,701,990
9 3,701,991
32 3,701,992
33R 3,701,993
43 3,701,994
74ES 3,701,996
74MP 3,701,995
74E 3,701,997
3,702,001
75 3,701,998
76L 3,701,999
92 3,702,000
109 3,702,002

CLASS 350
12 3,701,579
90 3,701,580
144 3,701,581
145 3,701,582
149 3,701,583
3,701,584
150 3,701,585
161 3,701,586
202 3,701,587
215 3,701,588
271 3,701,589

CLASS 351
39 3,701,590
41 3,701,591
130 3,701,592

CLASS 352
91 3,701,593
3,701,594
124 3,701,595
129 3,701,596
194 3,701,597

CLASS 356
96 3,701,601
152 3,701,602
246 3,701,603
3,701,620

CLASS 401
7 3,701,604

CLASS 402
58 3,701,605

CLASS 408
59 3,701,606
3,701,607

CLASS 416
134 3,701,611
141 3,701,612

CLASS 417
413 3,701,614

CLASS 423
213 3,701,822
3,701,823
225 3,701,824
273 3,701,825
290 3,701,826
329 3,701,629
456 3,701,827
466 3,701,630
598 3,701,828

CLASS 424
94 3,701,830
251 3,701,831
273 3,701,832
319 3,701,829

CLASS 425
23 3,701,615
115 3,701,621
186 3,701,617
192 3,701,618
198 3,701,619

CLASS 431
76 3,701,622

CLASS 444
1 3,702,003
3,702,004
3,702,005
3,702,006
3,702,007
3,702,008
3,702,009
3,702,010
3,702,011

D 2—	279	224,992		6	225,001		151	225,010	D52—	6	225,019			225,027			225,035
D 3—	9	224,993			225,002			225,011	D54—	12	225,020			225,028	D64—	11	225,036
D 6—	32	224,994			225,003	D26—	1	225,012			225,021			225,029	D70—	1	225,037
	127	224,995	D15—	1	225,004		5	225,013			225,022			225,030	D83—		225,038
D 8—	236	224,996	D16—	2	225,005			225,014			225,023	D55—	1	225,031		8	225,039
D 9—	187	224,997	D18—		225,006	D34—		225,015			225,024			225,032	D90—	20	225,040
	194	224,998	D22—	7	225,007		15	225,016			225,025	D56—		225,033			225,041
D13—	1	224,999		27	225,008			225,017			225,026	D61—		225,034	D96—	9	225,042
D14—	3	225,000	D23—	149	225,009	D45—	10	225,018									

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama..... 1
Alaska..... 2
American Samoa..... 3
Arizona..... 4
Arkansas..... 5
California..... 6
Canal Zone..... 7
Colorado..... 8
Connecticut..... 9
Delaware..... 10
District of Columbia..... 11
Florida..... 12
Georgia..... 13
Guam..... 14
Hawaii..... 15
Idaho..... 16
Illinois..... 17
Indiana..... 18
Iowa..... 19
Kansas..... 20
Kentucky..... 21
Louisiana..... 22
Maine..... 23
Maryland..... 24
Massachusetts..... 25
Michigan..... 26
Minnesota..... 27
Mississippi..... 28
Missouri..... 29
Montana..... 30
Nebraska..... 31
Nevada..... 32
New Hampshire..... 33
New Jersey..... 34
New Mexico..... 35
New York..... 36
North Carolina..... 37
North Dakota..... 38
Ohio..... 39
Oklahoma..... 40
Oregon..... 41
Pennsylvania..... 42
Puerto Rico..... 43
Rhode Island..... 44
South Carolina..... 45
South Dakota..... 46
Tennessee..... 47
Texas..... 48
Utah..... 49
Vermont..... 50
Virginia..... 51
Virgin Islands..... 52
Washington..... 53
West Virginia..... 54
Wisconsin..... 55
Wyoming..... 56
U.S. Air Force..... 57
U.S. Army..... 58
U.S. Navy..... 59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,701,278
3,701,296
4 : 3,701,201
3,701,329
3,701,536
3,701,538
3,701,545
3,701,648
3,701,838
5 : 3,701,429
3,701,523
3,701,885
3,701,986
6 : Re.27,520
Re.27,521
3,701,172
3,701,174
3,701,179
3,701,188
3,701,195
3,701,215
3,701,216
3,701,223
3,701,235
3,701,241
3,701,262
3,701,270
3,701,324
3,701,326
3,701,340
3,701,354
3,701,358
3,701,363
3,701,365
3,701,375
3,701,380
3,701,384
3,701,391
3,701,398
3,701,399
3,701,403
3,701,415
3,701,422
3,701,425
3,701,427
3,701,430
3,701,436
3,701,438
3,701,457
3,701,477
3,701,479
3,701,489
3,701,493
3,701,510
3,701,513
3,701,521
3,701,525
3,701,551
3,701,552
3,701,583
3,701,596
3,701,598
3,701,599
3,701,610
3,701,612
3,701,620
3,701,630
3,701,633
3,701,637
3,701,645
3,701,666
3,701,672
3,701,685
3,701,686
3,701,704
3,701,716
3,701,728
3,701,752
3,701,759
3,701,762
3,701,768
3,701,792
3,701,796
3,701,800
3,701,818
3,701,821
3,701,839
3,701,846
3,701,856
3,701,897
3,701,915
3,701,919
3,701,922
3,701,923
3,701,930
3,701,953
3,701,954
3,701,956
3,701,957
3,701,959
3,701,964
3,701,974
3,701,977
3,701,985
3,701,992
3,701,999
3,702,002
3,702,005
7 : 3,701,283
3,701,799
3,701,863
3,701,952
3,701,955
8 : 3,701,169
3,701,651
3,701,854
3,701,855
3,702,003
9 : Re.27,517
3,701,190
3,701,213
3,701,255
3,701,295
3,701,303
3,701,347
3,701,379
3,701,407
3,701,446
3,701,464
3,701,671
3,701,738
3,701,756
3,701,788
3,701,805
3,701,870
3,701,892
3,701,941
3,701,945
3,701,969
3,701,994
3,701,996
10 : 3,701,585
3,701,624
3,701,745
11 : 3,701,894
12 : 3,701,212
3,701,242
3,701,313
3,701,331
3,701,396
3,701,408
3,701,571
3,701,592
3,701,697
3,701,990
13 : 3,701,165
3,701,181
3,701,230
3,701,328
3,701,533
16 : 3,701,218
17 : Re.27,519
3,701,171
3,701,177
3,701,187
3,701,222
3,701,231
3,701,284
3,701,302
3,701,330
3,701,348
3,701,350
3,701,351
3,701,360
3,701,369
3,701,390
3,701,440
3,701,452
3,701,453
3,701,454
3,701,462
3,701,466
3,701,471
3,701,501
3,701,532
3,701,544
3,701,556
3,701,577
3,701,589
3,701,595
3,701,603
3,701,611
3,701,640
3,701,655
3,701,707
3,701,744
3,701,770
3,701,785
3,701,823
3,701,833
3,701,834
3,701,843
3,701,865
3,701,884
3,701,887
3,701,946
3,701,970
3,702,010
18 : 3,701,254
3,701,263
3,701,322
3,701,400
3,701,447
3,701,458
3,701,465
3,701,543
3,701,842
3,701,844
3,701,845
3,701,877
19 : 3,701,239
3,701,393
3,701,617
3,701,936
20 : 3,701,306
3,701,332
3,701,342
3,701,361
3,701,591
3,701,646
3,701,975
21 : 3,701,289
3,701,290
3,701,300
3,701,352
3,701,607
3,701,926
22 : 3,701,258
3,701,260
3,701,387
3,701,626
24 : 3,701,237
3,701,395
3,701,491
3,701,498
3,701,565
3,701,573
3,701,618
3,701,721
3,701,972
3,701,989
25 : 3,701,178
3,701,220
3,701,269
3,701,286
3,701,297
3,701,304
3,701,337
3,701,343
3,701,405
3,701,426
3,701,494
3,701,499
3,701,524
3,701,590
3,701,628
3,701,636
3,701,654
3,701,656
3,701,703
3,701,739
3,701,794
3,701,869
3,701,978
3,701,979
3,701,983
3,701,997
26 : 3,701,167
3,701,175
3,701,184
3,701,199
3,701,243
3,701,257
3,701,275
3,701,305
3,701,334
3,701,364
3,701,413
3,701,418
3,701,424
3,701,495
3,701,539
3,701,540
3,701,567
3,701,568
3,701,574
3,701,586
3,701,658
3,701,679
3,701,708
3,701,715
3,701,782
3,701,790
3,701,888
3,701,904
3,701,913

3,701,965
3,701,971
27 : 3,701,217
3,701,219
3,701,221
3,701,325
3,701,349
3,701,394
3,701,448
3,701,507
3,701,558
3,701,576
3,701,767
3,701,903
3,701,962
3,701,987
29 : 3,701,209
3,701,323
3,701,355
3,701,460
3,701,548
3,701,601
3,701,699
3,701,807
3,701,812
3,701,830
30 : 3,701,320
3,701,876
33 : 3,701,578
34 : 3,701,198
3,701,202
3,701,210
3,701,225
3,701,229
3,701,236
3,701,259
3,701,298
3,701,341
3,701,368
3,701,381
3,701,401
3,701,414
3,701,417
3,701,432
3,701,456
3,701,484
3,701,517
3,701,641
3,701,668
3,701,690

3,701,702
3,701,719
3,701,725
3,701,730
3,701,735
3,701,736
3,701,737
3,701,751
3,701,769
3,701,780
3,701,787
3,701,801
3,701,806
3,701,815
3,701,822
3,701,825
3,701,868
3,701,872
3,701,880
3,701,883
3,701,907
3,701,909
3,701,914
3,701,916
3,701,917
3,701,924
3,701,932
3,701,937
3,701,950
3,701,976
3,701,984
3,701,995
3,702,008
3,702,011
36 : 3,701,166
3,701,173
3,701,194
3,701,205
3,701,234
3,701,265
3,701,274
3,701,288
3,701,318
3,701,359
3,701,367
3,701,410
3,701,431
3,701,433
3,701,439
3,701,473

3,701,486
3,701,505
3,701,522
3,701,527
3,701,559
3,701,581
3,701,602
3,701,639
3,701,659
3,701,687
3,701,696
3,701,729
3,701,740
3,701,746
3,701,750
3,701,753
3,701,764
3,701,774
3,701,783
3,701,795
3,701,826
3,701,848
3,701,851
3,701,859
3,701,862
3,701,878
3,701,920
3,701,931
3,701,948
3,701,949
3,701,951
3,701,980
3,702,000
3,702,006
3,702,007
37 : Re.27,516
3,701,207
3,701,224
3,701,240
3,701,248
3,701,273
3,701,308
3,701,520
3,701,886
39 : Re.27,518
3,701,186
3,701,203

3,701,271
3,701,291
3,701,312
3,701,316
3,701,346
3,701,372
3,701,374
3,701,386
3,701,411
3,701,442
3,701,459
3,701,468
3,701,476
3,701,485
3,701,496
3,701,497
3,701,500
3,701,504
3,701,529
3,701,531
3,701,537
3,701,560
3,701,562
3,701,564
3,701,642
3,701,652
3,701,673
3,701,681
3,701,698
3,701,700
3,701,706
3,701,711
3,701,722
3,701,734
3,701,754
3,701,849
3,701,890
3,701,998
40 : 3,701,371
3,701,435
3,701,528
3,701,665
3,701,908
3,701,968
3,702,009
41 : 3,701,356
3,701,732
3,701,733
3,701,743

3,701,993
42 : 3,701,185
3,701,193
3,701,233
3,701,249
3,701,264
3,701,266
3,701,277
3,701,319
3,701,336
3,701,339
3,701,344
3,701,345
3,701,362
3,701,404
3,701,428
3,701,463
3,701,488
3,701,514
3,701,518
3,701,526
3,701,575
3,701,609
3,701,643
3,701,644
3,701,653
3,701,674
3,701,705
3,701,748
3,701,758
3,701,775
3,701,781
3,701,784
3,701,802
3,701,804
3,701,828
3,701,831
3,701,832
3,701,837
3,701,840
3,701,866
3,701,891
3,701,938
3,701,961
3,701,966
43 : 3,701,789
44 : 3,701,245

3,701,557
3,701,960
45 : 3,701,164
47 : 3,701,434
3,701,483
3,701,566
3,701,741
3,701,895
3,701,896
48 : 3,701,170
3,701,226
3,701,238
3,701,261
3,701,280
3,701,311
3,701,382
3,701,383
3,701,388
3,701,482
3,701,530
3,701,549
3,701,555
3,701,572
3,701,629
3,701,634
3,701,670
3,701,682
3,701,723
3,701,742
3,701,760
3,701,798
3,701,813
3,701,827
3,701,898
3,701,902
3,702,004
49 : 3,701,208
3,701,256
51 : 3,701,353
3,701,490
3,701,631
3,701,757
3,701,889
3,701,905
53 : 3,701,279
3,701,338
3,701,451
3,701,814
55 : 3,701,168
3,701,282
3,701,301
3,701,327
3,701,373
3,701,692
3,701,727
3,701,786
57 : 3,701,314
59 : 3,701,928

DESIGN PATENTS

5 : 225,008
6 : 224,999
225,005
225,007
13 : 225,006
225,042
17 : 225,031
19 : 224,994

25 : 224,997
225,001
225,002
225,003
26 : 225,040
225,041
29 : 225,010
225,011

34 : 224,998
225,018
225,037
225,039
36 : 224,992
225,012
225,013
225,016

225,020
225,021
225,022
225,023
225,024
225,025
225,026
225,027

225,028
225,029
225,030
225,032
225,035
225,036
225,038

38 : 225,000
39 : 224,996
42 : 225,014
225,033
48 : 224,993
224,995
49 : 225,015

U.S. GOVERNMENT PRINTING OFFICE: 0—1972

U. S. DEPARTMENT OF COMMERCE
Peter G. Peterson, *Secretary*

PATENT OFFICE
Robert Gottschalk, *Commissioner*